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POPULATION AND DEVELOPMENT EDUCATION CELL
STATE RESOURCE CENTRE FOR ADULT EDUCATION
LITERACY HOUSE, ANDHRA MAHILA SABHA
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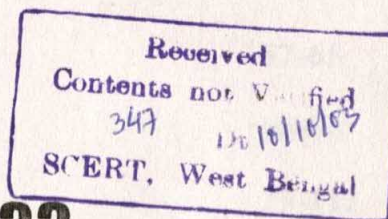
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Child Labour and Food Security

Coming to Grips with Rural Child Work. A Food Security Approach
by Rira Ramachandran and Lionel Massun (editors);
Institute for Human Development,
New Delhi, 2002;
pp 468, Rs 750.

G K LIETEN

Throughout much of the history of mankind, the majority of the people have had to work hard in their struggle for survival and in their dependency on masters and employers. They were and they are the working people. The working people included many working children, and until very recently (in the long haul of history) no distinction was made between adult labour and child labour. People had to live and work for their physical survival. Food and survival were generated by individual physical strength.

With the onset of industrial capitalism, children and young adults became the main source of profit generation. The average age of death of labourers in Manchester and Leeds in 1842 (as reported in E P Thompson: *The Making of the English Working Class*, Penguin Books 1980, p 364) was an appalling 17 years and 15 years respectively. A vast majority of the labourers in the textile mills and other industrial enterprises were lads and lasses between 12 and 15 years of age.

Bringing the many phenomena of exploitation, repression and neglect onto the public stage in those days has been the job of academics, political activists and journalists. By bringing the injustice into the open, the first step towards redress is taken.

It is appropriate to recall these words and the abominable circumstances in which the working class (children) in the 19th century had to live in Europe. In that perspective, the conditions of children in India at the start of a new century 2000

seem to be so much better. One indeed can look at the child labour conditions in two ways: either comparing it with the conditions in Europe (in its historical period as a 'developing country' in its own way) or comparing it with the objectives and ethical standards which the Indian state has adopted.

Within the latter terms of reference, India has a painfully bleak record, especially in comparison with such countries as Sri Lanka, Vietnam and China. Within the former terms of reference, Europe in its 19th century past has been doing worse than many developing countries today.

Rather than being defensive, and scotching the debate on child labour as a western imperialist ploy, it would be helpful to start seeing child labour within its historical context, including the context of globalisation, to bring all the horror, dreadfulness, and atrocities into the open. Thanks to the articulation of the child labour abuse, national and international concern has grown during the last decade of the 20th century, but ever more painstaking research shall be needed to bring the abuse of child labour onto the public stage. The growing concern will help to create a new awareness by which children of all classes and castes shall have comparable entitlements to human life enabling facilities like education, health, safety and nutrition.

Some important publications have appeared recently. The volume edited by Nira Ramachandran and Lionel Massun is such a publication rich in data and analysis. It is of high academic standards and deals with the various issues, which inform the discussion on child labour. These discussions remain a bone of contention. For example: what constitutes child labour. Many assumptions have crept into the 'child labour' discussion. There indeed is a bit of simplistic reasoning around it that one needs to be aware of. The simplistic reasoning involves on the one hand an exaggeration of the problem and on the other hand the isolation of the child

labour problem from macroeconomics.

Childhood in a country like India, as far as the underclasses of society are concerned, is characterised by two fundamental problems: the actual labour that children are compelled to do and the exclusion from the educational system. The danger, many have argued, is that as long as tens of millions are out of the schooling system, they are potential child labour victims. The solution, many of the same protagonists have argued, is a combination of anti-poverty strategies, particularly food-based interventions, and universal (and equivalent) education.

Ramachandran in her introduction goes halfway in identifying child labour as child labourers and also any work done by children which allow parents to spend more time on productive work, including all those children who remain outside the portals of the school. The various contributors to the book have used the concept child labour in these three different ways, and Ramachandran makes a very valid point when arguing that the focus should not be on the narrow category of around 11 million child labourers but on the approximately 80 million other out-of-school children as well.

Food-security is premised to be a crucial variable in explaining the derailed childhood of both actual child labourers and the deprived out-of-school children. The 22 articles in the book elaborate this common theme in four parts.

Part I has four articles quantifying the food and gender dimensions of child labour and also features an interesting article by Indira Hirway on time use, the empirical data of which have been collected with a one-day recall method in a stratified sample of more than 18,000 households. The author herself indicates a number of weaknesses in the data collection methodology, but the minute details of how much time children are involved in economic activities, in family welfare and caring activities, in education, in personal care, in leisure and in retirement, provides useful information about the relationship between child labour and the other activities which children are involved. One could prudently suggest, on the basis of the material, that definitely not all the nowhere children are child labourers.

The second part (*Understanding the Links*) has four articles looking into the probable causes of child labour, i.e., child labour as narrowly defined. D P Chaudhri and E J Wilson marshal a wide array of evidence, statistical evidence that is, to answer the vexed question as to whether there is a relationship between poverty and child labour. Of course, there is a relationship. The (relatively) rich, like the contributors to the book, the writer of this review and the readers of this journal, do not send their children to the workplace. The children who go out and work belong to poor families, exceptions notwithstanding. The relationship is obvious, but what is the exact correlation, and what are the causal aspects at play?

There is quite a bit of simplistic thinking on this score. Many experts, some of them also in this book, who put the blame on the parents. It is the short-term economic gain, they claim, that makes parents use the labour power of their children, and with that aim even procreate more than the less egoistic parents would do.

Nutritional poverty, educational poverty and the larger number of children are the main identifying characteristics of poverty, and it is thus normal that poverty, via larger number of children, increases the number of deprived children and children working as labourers. A remarkable difference between the children of the poorest families and the less deprived families is not so much that the former are working more (the difference is not very significant), but that their school dropout rates are much higher. On the basis of statistical data on 374 districts, Chaudhri and Wilson conclude that only around 4 per cent of rural children have never attended school, that 64 per cent of the girls and 49 per cent of the boys have dropped out and that over 90 per cent of them are not working while others are in full-time labour.

The tension between the narrow definition of child labour and the broader definition is present in many contributions. So also in the article by Mahendra Dev and Ravi on food security and child labour in south India. They distinguish child labour and child work, which is a sensible distinction, but then subsume under the latter, children deprived of the right to education and childhood, which actually means including all the nowhere children. The authors make an interesting observation that, contrary to popular perception, 'most of the children who are not attending school are not doing much work either' and that

'the direction of the causation does not necessarily run from child labour to non-attendance. This can be the other way round in the sense that dropout children take up productive work of their own choice or through parental pressure as a default occupation' (p 203).

The meaning of child labour and the strength of the correlation with female literacy, poverty, female work participation, food security, indebtedness, etc., are addressed head-on, but Part 2 of the volume fails to convince on what actually should be isolated as the major concern. Part 3, which deals with regional variations (case studies on the 'vulnerable' states of Bihar, Jharkhand, Madhya Pradesh, Rajasthan and Orissa) also has a surfeit of data, which makes it into a valuable reference work. One wonders, however, whether the editors could not have created more clarity by relying a bit less on tables (not all of them are indispensable) and construct an argument along a common theme. The information no doubt is very important, and the regional variations tell more than the aggregated data, but it is left to the reader to pick out the states one is interested in and reach at conclusions.

Child labour on the supply-side may be caused by a combination of factors. Poverty and food security are not the basic causes, as it appears for example from the studies Piush Antony on Bihar and Nira Ramachandran/Anup Karan on Jharkhand. More work will have to be done on the demand-side, that is the active search by employers for child labour. Most of the work that has been done by economists, particularly the many who have been studying child labour on behalf of the World Bank, have made an intricate multivariate analysis, but exclusively concentrating on the socio-economic characteristics of the parents, thereby obscuring the role played by employers.

One cannot but agree with Aseem Prakash, writing on Madhya Pradesh that 'the most proximate cause of child labour may be the demand side creation. ... The demand side pressure may create a selective market for cheap labour, possibly served by the children of the poorer households but not necessarily the poverty stricken households. Poverty in combination with the demand side pull, created a situation in which child labour is perpetuated and sustained' (pp 268-69). In other words, poverty and food insecurity create the space in which the pull force can operate.

The articles convey a fairly convincing picture of the food insecurity among the poorest families in the states that have been studied, but the close relationship with child labour is not established. There appears to be an absolute need to start a study on how the midday-meals programmes and other such interventions have had a positive impact on child labour reduction.

Part of this exercise is done in Part 4, which has a number of articles looking into the role of food assistance programmes. Two articles deserve to be mentioned. K P Kannan explains 'the remarkable record' of Kerala in reducing child deprivation in general. The public distribution system, the free noon-meal schemes for school children, supplementary nutrition for pre-school children and old-age pensions have established a bottom line of food security. In the 1970s, around 29 per cent of the children in Kerala and 33 per cent in Orissa for example suffered from severe malnutrition. Whereas the percentage in Kerala by 1990 had come down to around 12 per cent, the percentage in Orissa has actually notched up by 2 percentage points.

Much can be learned from Kerala. The focus on food security in general and child nutrition in particular has proved to be an important instrument in reducing child deprivation and child labour. Other measures, like the easy access to schooling as well as health care facilities, are also essential elements, and even if Kerala in all these respects has established a remarkable record, it remains a moot question what circumstantial conditions are needed for this example to be followed in practice in other states.

M P Joseph, in his report on a successful ILO project (attacking child labour in the slate quarries in Markapur, Andhra Pradesh) conveys optimism, but warns for simplistic project solutions. Eliminating child labour through food security is a strategy, which is conditioned by collateral developments. The perception of insecurity is often more important than the actual insecurity itself.

Joseph writes that 'what the noon-meal is really doing is to break the fear of future food insecurity'. It is that important mental change on which Kannan reports in his story on the example of Kerala. This experience thus, in the words of Joseph (p 437), 'brings home the key lesson of the need to have an efficient public distribution system that can provide the appropriate foodgrains...to target families at

affordable prices'. In the context of the present situation in India, where there is a large 'food surplus' with burgeoning food stocks, the solution of the child labour problem would profit immensely from the usage of these food stocks. It would, however, not be sufficient unless it is integrated with other elements as part of a holistic strategy on child labour: "Any provision of food security as part of a strategy directed at eliminating child labour should be coordinated with a set of other interventions, including community mobilisation, sensitisation, quality education, etc" (p 438).

Some of the articles are essential reading for all those concerned with the problem

of child labour. There is, however, a surfeit of econometric exercises, which may not entice non-economic readers to get involved with some of the chapters. A bit more political economy and a bit less econometrics could have generated more clarity. All too often when economists deal with social problems, the prosaic element is dramatically outdistanced by an overdose of regression exercises.

The volume has brought together a vast array of empirical information, in different regional contexts, and provides a great deal of policy recommendations and reflections on actual case studies. It will be a useful source for insight and further reflection on the problem of child labour. [37]

total expenditure or total income of government. It would have been useful if the author would have discussed this measurement issue, settle on an acceptable measure and then use the preferred measure consistently. In absence of such a procedure, there are many references of deficit increases in absolute terms though it was lower as a proportion of GDP.

The author's main finding is the lack of any nexus between the budget deficit and inflation during the period under consideration. The author mentions in the beginning of the study of the simple statistical techniques and tabulation of budget data were the main pillars of his analysis. This makes any definite conclusion impossible.

It is not clear why the author wishes to analyse the impact of fiscal deficit on a yearly basis. If it is accepted that there may be lagged or delayed impact of the deficit on the inflation, it would be simplistic to confine the analysis in contemporaneous terms. Moreover, the author presents his analysis to refute the stand that budget deficit leads to inflation without giving a fairly detailed statement of such a position. He does make a reference to "a hue and cry has been raised against the fiscal deficit with a persistent and insistent demand to reduce the deficit in order to control and reduce the inflation". The author does not seem to have realised that his refutation of any nexus between fiscal deficit and inflation sounds less than convincing in the absence of a fair presentation of the opposite viewpoint. In fact, the author himself is stating that "imbalances in the fiscal field lead to imbalances in the real sector through demand supply imbalances and exercised upwards pressure on prices leading to inflation as shown in table 2.2" (p 27). Such statements contradict the overall conclusions of the book.

The author has presented a number of statistical statements giving details about various components of government expenditure. He, however, has not tried to go beyond these numbers. For example, the author presents increased interest expenditure as a major factor behind higher revenue and fiscal deficit. While it is a chicken and hen problem in deciding whether higher deficit leads to higher interest expenses or higher interest expenses lead to fiscal deficit, it is possible to distinguish between increases in interest expenditure arising from (a) higher quantum of borrowings and (b) higher interest rates. The increase in interest expenses was a direct result of increase in the coupon

Impact of Fiscal Deficit

Fiscal Deficit and Inflation in India: A Study in Nexus by Ashutosh Ravavikar;
Macmillan India, 2003;
pp x+252, Rs 385.

M K DATAR

The title of the book under review is very inviting. Whether it is increase in money supply that causes inflation or whether higher budget deficit is the culprit, is a long-standing but un-resolved controversy. This question becomes even more interesting in the current Indian context characterised by some softening of inflationary trends, decrease in the monetisation of government deficit but without making a significant dent on the level of fiscal deficit. This book by Ashutosh Ravavikar seeks to answer the question whether fiscal deficit leads to inflation. It is a revised version of the author's PhD thesis submitted to the University of Pune. While the thesis was based on analysis of trends in budget deficit and inflation over the decade 1985-95, the same has been extended for a further period of five years in this book.

The main conclusion of the book is that fiscal deficit does not seem to have caused inflation. The book is divided into five chapters. After providing an introduction, the author discusses nature of fiscal crises as reflected in the finances of central government in 1980s and 1990s.

Chapter 3 discusses different concepts of budget deficit followed by an analysis of the behaviour of prices in the context of budgetary situation. In the last and most important chapter of the book, the author analysis trends in fiscal deficit and increases in wholesale price index on a year-to-year basis. Towards the end of the book the author also makes several suggestions to control inflation and reduce fiscal deficit.

As the book is focused on relationship between fiscal deficit and inflation the author has not given his opinion about suitability or relevance of different measures of deficit. While the author discusses different concepts of deficit and trends, he does not offer his opinion about relative efficacy of different concepts. As the analysis of the fiscal situation would largely depend on concept of deficit used, it becomes necessary to discuss relative merits of these concepts. One would notice that 'budget deficit', a traditional measure of deficit used in India, has consistently declined over 1985 to 2000. Similarly, monetised deficit, too, has come down considerably over the period. While the decrease in gross fiscal deficit is less significant, it is the revenue deficit which has in fact increased over the period. In such a situation analysis of fiscal situation would depend on concept of deficit considered relevant and useful. Similarly, when nominal variables like deficit are measured over a period of time, it is customary to measure the trends in terms as the percentage of GDP or as a percentage of

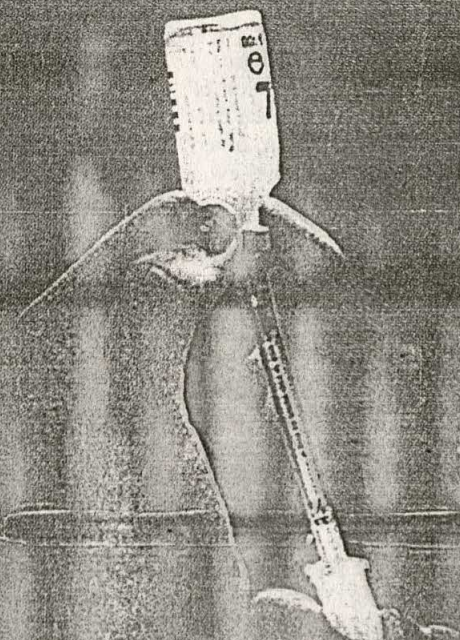
Diabetes In Children

Dr. J. L. Agarwal

Generally, it is believed that diabetes is a disease of adults, especially of middle age and old age, but it can affect children and young at any age and the incidence of diabetes in children is rapidly increasing. Diabetes in children is different from adult diabetes. Diabetic adults are obese and their blood glucose level can be controlled by appropriate change in lifestyle, eating habits and anti-diabetic pills and this adult onset or maturity onset diabetes is called as Type II or Non-Insulin Dependent Diabetes Mellitus (NIDDM). Diabetic children and young are lean, thin and along with eating proper meals, they have to take regular injections of Insulin to control the disease. Diabetes in children is called as Insulin Dependent Diabetes Mellitus (IDDM) or Type I diabetes.

Why Diabetes Affects the Children?

Type I diabetes is a familial disease to a great extent and the gene responsible for it has been recognized. Children born of those mothers who have suffered from rubella, mumps, chicken-pox or other viral diseases during pregnancy have greater risk of diabetes. Children who have been given cow's milk before two months of age have also increased chances of developing diabetes. Children who eat smoked or cured food, which contain high levels of Nitrosamine also have greater chances of developing diabetes. Besides these many other dietary elements are implicated for developing diabetes. In modern life style, the young are not spared from mental tension and these are higher risk factors. Diabetes in children is an autoimmune disease wherein the antibodies are developed against the pancreatic glands and then the insulin hormone can't be secreted leading to diabetes mellitus.



How to recognize Diabetes in Children?

Diabetes is a life long complicated disease and can cause serious immediate or long-term problems. This disease should be recognized at the earliest and regular treatment should be started so that children can be protected against serious outcome of the disease and they can have normal physical, mental and social development.

These children may complain of increased micrution, thirst, appetite and inspite of increased appetite and food intake, their weight decreases. They can complain of fatigue, lethargy and they are lusterless. If blood glucose estimation is done, it is found to be more than 100 mg per 100 ml. Diabetes in children are not easily suspected and many children are brought to the hospital in an unconscious state or with serious infections. When blood glucose estimation is done, they may be found to be suffering from diabetes.

Care of Diabetic Children

Diabetes is a life long complex disease with multiple organ involvement. Few decades ago, diabetic children were given a very dim picture of life, but now advances in the last few decades have changed the view. Now with proper care and treatment, children can live an almost normal life and can take part in any type of activities. Risk of serious complications like diabetic retinopathy, neuropathy, disease of the large blood vessels, nephropathy, can be decreased.

For the control of Diabetes, these children have to consume proper food in fixed amounts, at regular time, with regular exercise and should take their regular dose of insulin, so that their blood glucose level is kept under control. Problems of diabetic ketoacidosis should be prevented. These children should have no problem of hypoglycaemia and they should attain normal growth. They should not suffer from emotional problems due to their illness.

➤ Diabetic children should take 20 to 30 units of Insulin injections. Daily 2/3 doses before

Diet for Diabetic Children and Adolescents

Calories-	About 2000 calories
Carbohydrates-	300 gms.
Protiens-	45 gms.
Fibres-	20 - 35 gms.

Sample meals of Diabetic Youth

Morning (6 - 7 am)	- 1 cup tea/coffee without sugar and ¼ cup milk
Breakfast (8 - 9 am)	- 2 small idli with ¾ katori sambhar/two toast/two sandwiches, 1cup milk, 1 orange.
Mid-day (11 - 12 am)	- 2 slices of bread or 1 vegetable sandwich.
Lunch (1 - 2 pm)	- 2 small rotis (phulkas), 1 katori rajma gravy, 1 katori vegetable 1 katori rice, 1 katori curd, oil for cooking - 2 tbs., salad.
Tea (4 - 5 pm)	- 1 katori Potato poha, 1 cup tea/coffee without sugar, ¼ cup milk, oil for cooking - 1 tbs.
Mid-evening (6 - 7 pm)	- One apple
Dinner (8 - 9 pm)	- 2 small phulkas, ½ katori rice, 1 katori mung dal/ other dal, 1 katori curd, 1 katori green vegetables, salad, oil for cooking 2 tbs.
Bed-time	- 1 cup milk without sugar 2 slices of papaya.

breakfast and 1/3 doses before dinner. Usually they are given 2/3 mixtures of laxtate insulin (2/3) and regular insulin (1/3). As they grow up, they must learn to take the injections themselves to avoid risk of missing the dose and they should be instructed to observe aseptic precautions.

- Diabetic children must exercise, but with care – it helps to control blood sugar levels. They must do brisk walking, swimming, jogging, aerobic exercise, they can participate in any game of their liking like football, hockey, etc. The children should be aware of the effects of exercise on blood sugar levels and proper adjustment of the Insulin dose and meals should be made depending upon their level of activities. They must be aware of the problems arising out of hypoglycaemia like excessive sweating and cloudiness. They must stop the exercise immediately and should consume about 15 gms of glucose or sugar containing substances (sweets, chocolates, candy) and should repeat the same amount every 10 minutes till they recover.

- Diet of these children is of paramount importance. The amount and quality of food depends upon their level of activities. The diet should be such that it keeps the glucose, lipid, and weight under control. The likes and dislikes of the children should be considered while preparing the food. They should eat at regular intervals. The energy required for diabetic children are the same as normal children and additional calories are needed during severe illnesses. These children should avoid sugar, sweets, honey, candy, but can consume fruits and vegetables in plenty. They should be given three major meals and three mid meals and snacks at bed-time. Their diet should contain 55 to 60% of calories required from car-

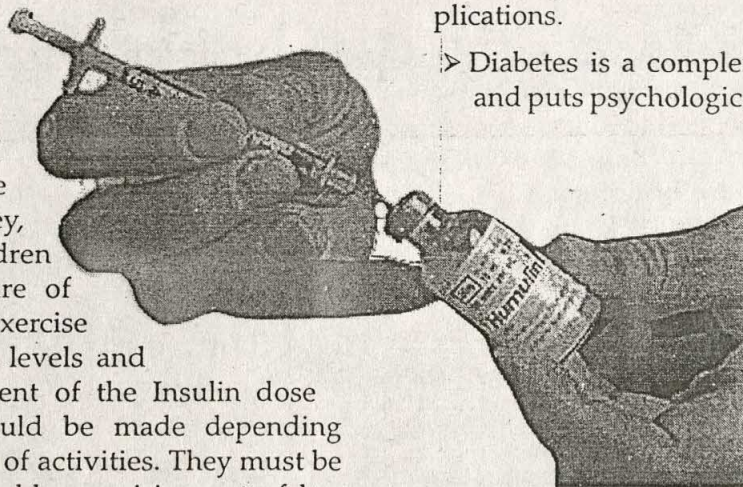
bohydrates, 15% from proteins, 25 to 30% from fats and about 20 to 35 gms of dietary fibres and sufficient amount of vitamins and minerals. They should consume adequate amount of water.

- Diabetic children should be regularly checked. They should learn to examine urine sugar and blood glucose levels themselves. They should be examined by doctors at regular intervals to know any complications.

- Diabetes is a complex life long disease and puts psychological and an economical burden on the family. These children should not be neglected or given undue extra care. They should learn to take care of themselves as early as possible. If blood

sugar levels of these children are strictly controlled by balancing the diet, exercise and amount of insulin, they can take part in any activity, can attend school and their development will be normal.

- Diabetic children should know the signs of hypoglycaemia. Mismatch between food, exercise and insulin are a common cause of hypoglycaemia. Delayed or missed meals, decreased carbohydrate content in meals, increased physical activities, heavy exercise or poorly timed insulin can cause hypoglycaemia which may be fatal if not dealt promptly. These children should always carry sugar/glucose/sweets/chocolates, biscuits and an identity card stating that they are suffering from diabetes and should be given sugar in case of odd behaviour.



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RIGHTS OF THE CHILD

V.S.Gupta

The United Nations Convention on the Rights of the Child has been one of the most widely ratified human rights conventions in history. The convention which has been ratified by 191 countries, is the most vivid illustration of the global social construction of childhood. The popularity of the convention seems to indicate that a vast majority of the world's governments agree on what are the rights of the child, and what the states have an obligation to provide.

About **Child Labour**, the Convention says : *The rights of the child to be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child's education or to be harmful to the child's health or physical, mental, spiritual, moral or social development.*

Unfortunately, the international conventions and laws notwithstanding, unpaid, underfed and often working as bonded labourers to pay off family debts, children well below 14 years of age are a significant part of India's labour force.

Likewise, the Universal Declaration of Human Rights (Article 26) says 'Every one has the right to education. Education shall be free. Elementary education shall be compulsory.'

The book under review discusses the above twin issues of

child labour and children's right to education which have become a matter of international concern. Written in the South Asian context, the issue of child labour is widely seen as a manifestation of poverty. The contribution of child to the household economy is often seen as important to meeting the basic needs of the poor families. The South Asian region has the largest number of children out of school.

This book is the outcome of a Workshop: Child Labour and the Right to Education in South Asia: Needs Vs Rights? Social Policy from a Child - Centered Perspective' held in New Delhi in 1999. The Workshop formed part of the South Asian component of the Social Policy Programme of the Institute of Development Studies, Sussex.

The Delhi Workshop brought together scholars, activists and policy makers to discuss the issue of child labour and education in the context of the apparent conflict that is posed between the economic needs of families and the rights of their children. It provide a forum for critical debate to which participants brought a range of perspectives, rich insights and experiences from the field as well as policy issues. The focus was mainly on India and Bangladesh. A number of key areas for research emerged at the end of the

deliberations.

The chapters of the book are divided into four thematic areas: Alternative Perspectives on Children, Childhood and Child Labour; Socio-Economic Context of Work and School; Policy Context for Addressing Child Labour and Education and Operationalising the Right to Education: Government and Non-Government Interventions.

The papers presented at the Workshop drew on the experiences of India and Bangladesh to cover various themes related to the problems of universalizing education in societies marked by poverty. The Workshop also recognized that there were many children who were neither at school nor at work. Their problems were not encompassed by the dichotomy between work and school. Exclusion in their case was partly a question of sheer poverty and partly of the unresponsiveness of the schooling system. It was also a manifestation of social discrimination on caste and gender grounds.

Some of the discussions at the Workshop touched on the possibility that economic liberalization, globalization and increasing exposure to international market forces had exacerbated the incidence of child labour. Certainly, many of the most publicized cases of child labour, such as those laid off from the Bangladesh garment industry were part of export-oriented in-

dustries. However, it was also recognized that children worked in a variety of activities, not all of them on export-oriented and that the most hazardous or exploited activities that children worked in were not necessarily export-oriented.

There was much discussion on the pervasive role of the state in the educational system. Despite the proliferation of private and NGO provision, the participants at the Workshop were unanimous in the belief that the state had to remain the main provider of education, particularly at the primary level and particularly for the poor. Conse-

quently, the practices of the state in delivering on this obligation, particularly its failure to provide equitable and universal access to education, came in for critical scrutiny.

With contributions from policy makers, activists in the field of education and academics, the book has eminently succeeded in its objective of bringing together a range of perspectives to the problem of child labour and education of the children in South Asia.

Child Labour and the Right to Education in South Asia : Needs Versus Rights?

Editors : Naila Kabeer, Geetha B. Nambissan, and Ramya Subrahmanian; Published by SAGE Publications, New Delhi.

The reviewer is former Professor at the Haryana Agricultural University and former Country Representative, Asian Media Information and Communication Centre, Singapore.

...Contd. from page 46

In Nutrient Film Technique, nutrient solution is recirculated in a shallow stream over the bare roots of growing plants to provide adequate water, nutrients and aeration.

In all these systems (i.e. Hydroponics, Aeroponics and Nutrient Film Technique), pH adjustment of nutrient solution and aeration of roots are maintained.

In India, less than 12 units are operating. There is about 25 acres under the hydroponics methods of cultivation, unlike in other leading countries like USA, Australia, Israel, Japan, Holland, New Zealand and South Africa, where the overall cultivation under the system is around 6,000 acres.

Although the technology is very ideal for growing high value vegetables throughout the year, the fact that it requires huge investment and some basic knowledge on chemistry, plant physiology and crop botany has deterred many from adopting the technology. For instance, for producing quality vegetables, the initial investment would be around Rs. 18 lakh per acre

under the aggregate culture or the gravel culture method wherein cinders, broken bricks, clinkers, plastics and vermiculite are used instead of soil. This also includes the working capital and the cost of infrastructure development. If the machinery is imported, the investment would be nearly Rs. 25 lakh per acre.

Hydroponics can be used in places where ordinary horticulture or agriculture is impossible. The system can assume higher yield with good quality crops as water and nutrients are supplied proportionately as required. Moreover, it also results in efficient utilization of water and nutrients. Hydroponics is mostly used in closed systems like glasshouse or polyhouse, so there is no risk of erosion, drought or flood and also help growers to control pests and diseases. Since there is no soil, so there is also no risk of catching soil born diseases and result in absolute cleanliness.

There will also be tremendous increase in the profitability levels. Growers will be able to recover the initial investments in less than three

years. Though farmers will not be able to realize any profit in the first year, there would substantial increase in profits in the course of time. The normal life span of the unit is a minimum of 10 years before replacing the key components.

In India, there is tremendous potential for growing vegetables such as tomato, capsicum, lettuce, cabbage, cauliflower, cucumber and broccoli in hydroponics. Tomato grown through this system in Bengal has yielded an average of 200 tons/acre against 15-20 tons under ordinary soil culture. A comparison of total yield between hydroponically grown and open field cultivation of different vegetables is shown in Table 1 on page 46. A Hydroponics Information Center has been set up in Mumbai to provide information and suggestions for popularizing this technology. It is rather a recent method of cultivation which has a vast scope in the near future because of its inherent advantages.

The author is Research Scholar, Department of Vegetable Crops, Ludhiana, Punjab.

Development with dignity

Completing 25 years of sustained grassroots development efforts, the Working Women's Forum (India) is today a pioneer in building leadership skills among women. Giving greater importance to field based activities, the WWF (I) is now a model of decentralised development movement with numerous autonomous field offices spread over Tamil Nadu, Andhra Pradesh and Karnataka.

Jaya Arunachalam, the founder, does not see the WWF (I) as an organisation but as a social movement, providing a social platform to poor women workers.

Twenty-five years ago, Arunachalam, then an active Congress party worker, gave up party work to pursue the challenge of providing an alternate development model with human dignity as its main focus. The need then for an alternate development model that was pro-poor, pro-women and anti-caste was urgent as caste and feudal values inhibited the process of development.

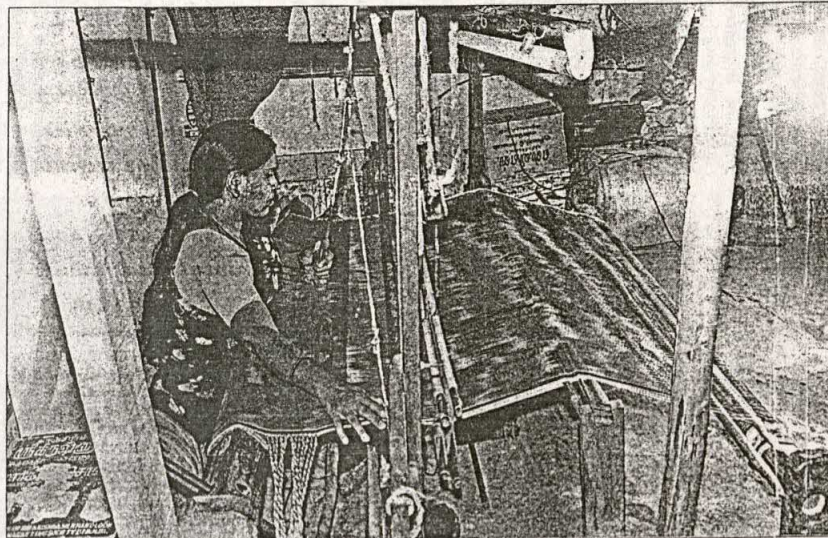
Using micro-credit assistance as a tool for mobilisation of poor women workers, the WWF (I) has innovatively experimented with success its model of women's empowerment. As on March 31, 2003, WWF (I) has over 700,000 members spread over 3,000 villages and 1,600 slums.

Today the WWF serves as a model for other such efforts and is frequented by teams of civil society organisations from all over the country who come to learn from them. Its various developmental and social action initiatives encompass such activities as informal banking and micro loans for rural and urban women workers, insurance and social security for women in the informal sector, reproductive and child care services, and a trade union for unorganised sector women workers.

Emphasising a strong field-based organisational structure, the forum encourages group structures, transcending barriers of caste, gender, and religion. Besides, the major chunk of organisational business

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The Working Women's Forum has unleashed an empowerment process at the grassroots, liberating poor women from different forms of exploitation. As the organisation completes 25 years, U. KALPAGAM profiles a success story.



A quiet revolution in women's empowerment.

takes place in the slums, markets, village courtyards and places of worship. The forum's greatest success lies in its innovative approach to integrate the poor at all levels in its institutional framework as well as towards better delivery systems to reach large numbers of poor. It therefore, entrusts key responsibilities of the organisation and its administration to poor women themselves, by selecting and training internal cadres from neighbourhood communities.

The forum enables poor women emerge as leaders in their own right to influence public policy through collective action thus improving their social standing.

Strengthening of their productive role is complemented through reproductive and child health care programmes that focus on poor women's health and wellbeing. Children's homes in the urban and

and school dropouts a new lease of life. The service programmes like night classes for child workers and vocational training centres for adolescent school dropouts provide alternate life options and integrate them into mainstream society.

The self-development by the women in one socio-economic context encouraged them to form spearhead groups to mobilise women in different socio-cultural scenarios.

It was in Dindigul in 1979 that WWF (I) for the first time moved into rural areas. Its micro-credit efforts enabled poor women to sell local produce like banana, tamarind, chillies as head loaders to carry them around the villages or to carry them to village markets and the town nearby. This was a great relief for poor women there since there was no scope for agricultural employment in this drought prone

In Adiramapattinam, the fisher women who played a crucial role in the fishing economy there established an informal banking centre to meet their credit requirements and also fought for and secured their rights to repair fishing canals, fish auctions and transportation rights.

In Narasapur, a region of agricultural prosperity WWF (I) work exposed the exploitative and oppressive conditions of women lace artisans numbering nearly 80,000 in the East and West Godavari districts of Andhra Pradesh. WWF (I) replicated the Chennai experiment to facilitate lace makers with a cooperative and a marketing outlet along with access to credit. Later on WWF (I) brought into its fold rope-makers and weavers in the adjacent districts who were equally exploited and lived in intense poverty.

leadership of the Forum became more aware of the presence of oppressive structures wherever they went.

They identified one such group, the *beedi* rollers of Vellore in 1983, where child labour was widely prevalent. *Beedi* workers and matchstick makers were organised and unionised resulting in a revision of their wages and amelioration of their oppressive working conditions. Access to credit relieved their children from bonded labour and enabled the payment of minimum wages by the employers as well as the initiation of pension schemes for these workers.

Today, with the worldwide stigma associated with cigarette smoking, WWF (I) has initiated an alternate livelihood programme for the *beedi* rollers in Vellore to train them in other occupational skills.

WWF (I) started a branch in Bangalore to provide relief to *agarbati* workers. In the slums where these workers lived, ethnic tensions created an oppressive situation. Most workers were migrants from border areas of Tamil Nadu and Andhra Pradesh.

The cooperative society was started there after the ethnic differences were resolved and the *agarbati* workers united under the banner of WWF (I) to work for better working and living conditions. Access to credit and training enhanced their living standards.

In Bellary where large-scale oppression was inflicted on girls, by dedicating them to a female deity to become 'Devadasis' resulting later in child and adult prostitution, WWF (I) provided training and alternative gainful employment and thus rehabilitated the women there, giving them a new lease of life.

In Kanchipuram, a centre of silk weaving, male weavers alone were recognised by the government cooperatives. This monopoly in getting raw materials led to men pledging the raw materials to spend on liquor.

As a result, women and children were shackled by poverty. In 1990, WWF (I) began a branch for women weavers. This relieved them from their indebtedness, and their children from bonded labour. It also

continued on page 6

Development...

Continued from page 4

facilitated women weavers' occupational mobility.

Today, the spread of micro-credit through formation of Self Help Groups (SHGs) as a poverty alleviation strategy is well known with each state vying with the others to show that its progress is remarkable.

What is indeed unique with the WWF(I) movement is that it has simultaneously led a quiet revolution in women's empowerment.

Although poverty eradication remains the central agenda of WWF(I), it seeks to

achieve it through a dual process of empowering poor women and promoting grassroots leadership.

Ranganayaki first joined the forum in 1978 and took a loan under the micro credit programme. Now she is a trainer and freely debates and discusses issues relating to maternal and child health, nutrition, immunisation and family welfare.

Her own understanding of how she has become empowered is noted when she observed that now her husband serves her "you take care of the Sangam work, I will take care

of the home."

The experiment of the WWF(I) with provision of micro credit for poor women has resulted in the transformation of poor women into entrepreneurs, changed situations of invisibility to visibility and promoted upward mobility of poor women.

The peer group by providing a sense of social security has promoted collective action for social change and enhancement in the standards of living, giving poor women their rightful place in society.

Most women are now heads of households, and are crucial



Enabling poor women emerge as leaders in their own right.

Magazine

decision-makers at home. Many members who had earlier experienced domestic violence are now free of it due to personal empowerment by way of increased economic autonomy and having a say in decision-making.

It has also enhanced their understanding of the need for gender equity in the family as they now share their assets equally between the daughters and sons. As grassroots leaders they now take up civic action on their own initiative for the pressing problems in their neighbourhoods.

The prevalence among poor women of widespread illiteracy, maternal morbidity, high maternal and child mortality aggravated further by time-honoured cultural values that promote gender bias is reflected in the poor health status of working women.

The need to enhance the economic, social and health status of poor women was therefore of priority focus. WWF(I) has adopted a holistic approach - of a reproductive health care system to take care of women both as mothers and as workers, by attending to the health needs of the mother and the child. It has also attempted to improve their working conditions in their work place through occupational safety measures.

Health care advocacy through Reproductive and Child Health Programme at the grassroots has given poor women informed choice of services on contraception and voluntary acceptance of safe health care practices impacting about one million poor families.

An innovative health insurance programme provides maternity benefits, reimbursement of hospitalisation expenses, cataract operation, treatment of anaemia and organises preventive health check-up camps.

The key women in this programme are the well-trained and highly motivated cadres of women, the Community Health Workers (CHWs). Trained in communication skills and being a member of the same community, the grassroots health workers are highly sensitive to the problems of the poor.

WWF(I) has legally registered itself as a trade union for unorganised sector workers, National Union of Working Women (NUWW) in 1982. It successfully brought poor women on a socio-political platform to undertake a series of advocacy measures. These have ranged from land rights, housing rights, Equal/Minimum wages rights, access to credit, technology, trading devices, and issues of human rights such as dowry, female, feticide, child labour and child prostitution as well.

The NUWW efforts focused on an entitlement approach and provided women access to basic services such as better housing, drinking water, health, education, sanitation, public distribution system, consumer services thereby improving their living conditions.

But the moment of pride for the forum members was when the "International Activist Award of 2003" given by the Gleitsman Foundation, California to their President, Jaya Arunachalam. •

Protect the GIRL CHILD

Women have attained heights of success in almost all walks of life, from academics to sports and beyond that. High-tech professionals and top ranking officials have all seen the growing dominance of the so called fairer sex. This definitely means that men are not behind, they are rapidly marching ahead and females are closely following them in all these fields. But the world should realize that it is the woman who builds and binds a family. It is the mother who breeds and moulds a child. It is she who can usher culture in the society.

It is a matter of serious concern with the progress of the passing years the need to protect the girl child is speedily rising.

Crimes targeting women, and by women, are steeply rising. But what is the society, press or our vigilance doing towards protecting the girl child? Women have always been projected as a commodity which adds to entertainment. The female form is marketed at high stakes in beauty

pageants and in the film world. This only nurtures a sense of longing in the minds of the growing young boys. So who is to blame when many such men pounce on a female prey whenever they are given the opportunity to do so? It looks like that unless the values nurtured at home in the upbringing of a male child are extremely strong in morality, it is simply impossible for a young boy today to not have unhealthy immoral feelings towards the female sex. But the question is how many such homes exist today, for amongst the elite there is no time away

from work to nurture such moral values. Since the parents are busy at work, children are hooked either to the TV or internet and this is accepted by that class of the society as a symbol of status. If this is the state of affairs amongst the elite, then what better can we expect among the lesser privileged class of the society whose sole entertainment are the Bollywood films and the television. Of late it has been observed that most of these films and serials, besides projecting woman as a piece of enjoyment, also throw light on how wicked and untrustworthy a female can be. Such negative ideas, when seeded in the minds of growing young girls with no other source to correct them, are bound to produce more and more of such females who can only add to the burden of vices in the society.

But the question is — What is being done to control this blazing fire? Detailed exposure of incidents with names and location as is routinely done by the press these days, together with female centered easily accessible entertainment has

only been adding fuel to this fire. Has anyone ever spared a thought to imagine the future of a girl or her family who has been victimized in such an act of crime? What is being done to rehabilitate these unfortunate girls? It has been seen that many such girls in their struggle for survival in later life land up in brothels for the society refuses to associate them with anything better.

There is yet another section of young girls who over years of tendery nurturing all the ideas they have been exposed to through the media have been thoroughly impressed with

the value that if a female can

harness nothing good to make a survival, then her femininity would be a rewarding resort to cling on to. So the question here is why has the society failed to inculcate strong moral values in the new generation?

But the obvious paradox remains that lately there is also a rise in paedophilia (desire to have sex with young children). Many elderly people have been held for such crimes and it is extremely disheartening to note that

ACE
a P Das

various such incidents have been reported when

teachers have victimized their young, innocent girl students. It is disgraceful to learn that the person who is supposed to shoulder the responsibility of seeding morality in his students, is feasting on their helplessness and simplicity. But what is our society doing in response to these acts of crime except publicizing all details, which, besides sealing all future avenues of the victim, leaves her with no resort for survival.

It is high time for all of us

to join hands and find an avenue to create a society where the number of such untrustworthy males are few. Let the female population survive without the constant threat to her security. Look on the girl child as a beautiful creation of the Almighty and not as an attractive, weak object who should be exploited of her helplessness in a contest of muscle power with the males. For in all other fields of life, no man can be assured of a victory so easily as over a female.

Let us all try to cultivate healthy trends to create a secure environment for the survival of the girl child.

my SPA
Dr. Madhumita

SELF HELP GROUPS & MICRO CREDIT

Synergic Integration

Sabyasachi Das

Rural development means over-all development of rural areas to improve the quality of life of rural people – men, women and children. It is an integrated process, which includes social, economic, political and spiritual development of the poorer sections of the society. In all rural development programmes, human beings are the causes and consequences. The core objectives of rural development are:

- Food for hungry people
- Language for their ideas
- Education to all – women, men and children

Rural development emphasizes development of

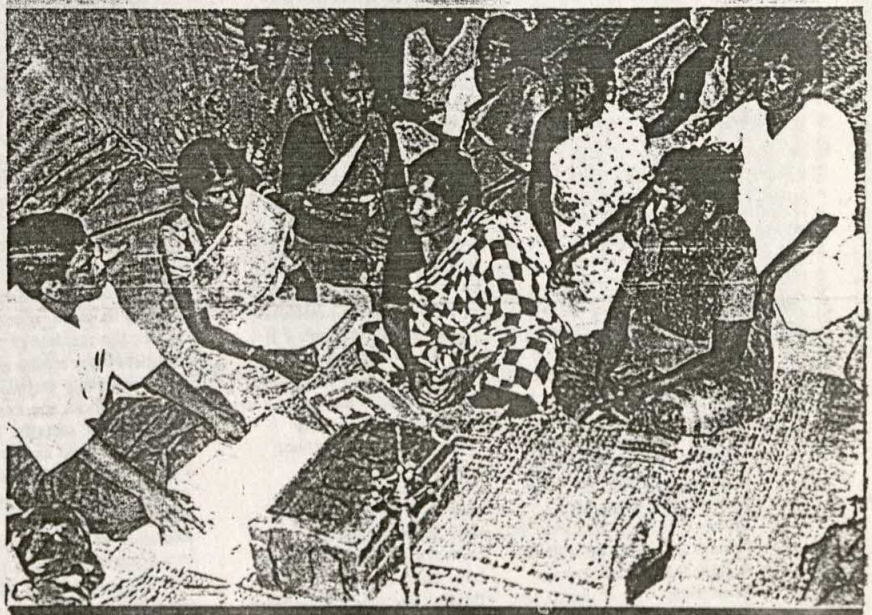
- Agriculture and Allied activities
- Village and cottage industries and handicrafts
- Socio-economic infrastructure which includes setting up rural bank, cooperatives, school etc.
- Community services and facilities i.e. drinking water, electricity, rural roads for transportation.
- Human resource mobilization

Right from independence, in fact even in the pre-independence era, rural development vis-à-vis poverty alleviation had been considered as a major challenge to our country. Initially, it was assumed that various Poverty Alleviation Programmes such as IRDP, TRYSEM, DWCR, ICDP, SITRA etc. could be able to enhance income level of the rural masses

through trickle down effect. But, these programmes failed to achieve the target because 'trickle down' effect of economic growth cannot be achieved if the growth is not

accompanied with infrastructure development; which is essential for speedy percolation of the benefit of such programmes. Most poverty alleviation schemes also faced th-

The inability of the credit institutions to deal with the credit requirements of the poor effectively has led to the emergence of micro-finance or micro-credit system as an alternative credit system for the poor. Usually, credit institutions provide finance for productive purposes but sometimes poor people need money for consumption or for emergency purposes, which many a time cannot be catered by the formal credit system or government sponsor and poverty alleviation schemes. In rural India, it can be seen that the poorer sections of the society and destitute cannot avail of the credit from banks and other formal institutions due to their inability to deposit collateral security and mortgage property. At this point of view, micro financing or group lending is being looked upon as the instrument that can be considered as the golden stick for poverty alleviation vis-à-vis rural development.



problem of credit mobilization to the rural masses. In the earlier schemes like IRDP, DWCRA, etc. the beneficiaries perceived the loan as grant. They did not feel the responsibility of repaying the loan. Bankers too did not have the time or mechanism to monitor the repayment process. Due to poor recovery of loan the schemes became non-viable (Rath, 1985 and Rao et al., 1990). The urgent need is capacity building of the poor masses so that they can progress themselves; mere financial support cannot be useful in Rural Development in the long term. Group approach can make rural people more capable for considerable improvement in their quality of life.

Micro-Financing

Credit is one of the most crucial inputs in rural development. Access to institutional credit for the rural poor is a very important precondition to any poverty alleviation strategy. Rural credit system has been experienced with huge overdues due to repayment problem. Chronic overdues and poor recovery only hamper the development banking. The major internal and external factors which have been weakening the rural credit system are:

- Inappropriate systems/inadequate procedures followed in regard to identification and selection of borrowers (Kahlon and Singh, 1992)
- Ineffective supervision and monitoring over the end use of credit (Bird, 1994; Sankariah and Reddy, 1994).
- Inadequate rural orientation of staff and lack of positive relationship between bankers and the borrowers.
- Natural calamities and unforeseen circumstances like droughts, flood, earthquake etc.
- Inefficient working of production units due to traditional produc-

tion practices in uneconomic land holdings.

It is prime time to take appropriate measures in order to improve rural credit system. Therefore, lending approach may be changed, credit need assessment may be done in an integrated manner and timely and judicious utilization of the loan by the borrowers should be ensured (Kalra and Singh, 2000).

The inability of credit institutions to deal with the credit requirements of the poor effectively has led to the emergence of micro-finance or micro-credit system as an alternative credit system for the poor. Usually, credit institutions provide finance for productive purposes but sometimes poor people need money for consumption or for emergency purposes, which many a time cannot be catered by the formal credit system or government sponsor and poverty alleviation schemes. In rural India, it can be seen that the poorer sections of the society and destitute cannot avail of the credit from banks and other formal financial institutions due to their inability to deposit collateral security and mortgage property. The government sponsored poverty alleviation programmes are evolved centrally and planned without participation of the local people and, therefore, often fail to address the need and requirement of the poor. Lack of participatory approach in planning and execution of these programmes result in complete failure to improve socio-economic condition of the poor masses for which these were evolved.

At this point of view, micro financing or group lending is being looked upon as the instrument that can be considered as the golden stick for poverty alleviation vis-à-vis rural development.

International Initiative

Mohammed Yunus, popularly

known as father of micro-credit system, started a research project in Bangladesh in 1979 and came out with ideas of micro-credit that resulted in the establishment of Grameen Bank in 1983.

In 1984, the participants of the third international symposium on mobilization of personal savings in developing countries, organized by the United Nations, agreed in the final resolution that – internal savings must provide the basis of credit programmes, state control interest rate must be relaxed, more decentralized financial services and strong linkage between the formal and informal credit institutions for development (Dasupta, 2001).

In 1984, the Federal Ministry of Economic Co-operation and the Agency for Technical Cooperation of the Federal Republic of Germany undertook a series of studies and workshops on rural finance in developing countries that resulted in a new policy of Self-Help Group (SHGs) as a financial intermediation between rural poor and financial institutions, on one hand and micro enterprises, on the other.

In 1986, the participation of Asia and Pacific Regional Agriculturist Credit Association (APRACA) decided on a coordinated programme for the promotion of linkage between banks and SHGs for rural savings mobilization and credit delivery to the rural poor.

In 1989, the Central Bank of Indonesia with the involvement of Self-Help Promotional Institution (SHPI) started a pilot project entitled "linking Banks and SHGs".

Basically, micro-credit system gained the momentum in the mid-'90s after the World Summit for Social Development, held at Copenhagen in 1995. The Summit which emphasized the easy access to credit for small producers, landless

farmers and other low income individuals, particularly, women, urged governments of various nations to take appropriate actions in order to make easy accessibility of credit to the poor. Subsequently, in 1997, the World Micro-credit Summit in Washington announced a global target of ensuring delivery of credit to 100 million of the world's poorest families, especially the women of those

it easier to micro-credit providers to pursue institutional development process. Therefore, Micro-credit system had been considered as an important instrument to provide credit for self-employment and other financial and business services, including savings and technical assistance, to very poor persons. This is the concept of economic empowerment of the poor people through formation

groups in terms of education, occupation, income distribution, sex composition, but in the long term, stability of SHGs depends on the members' loyalty to it and the adequacy of SHGs to meet the growing needs of the members. The author personally believes that caste should not be the yardstick of homogeneity rather casteism hampers the mental development of individuals.

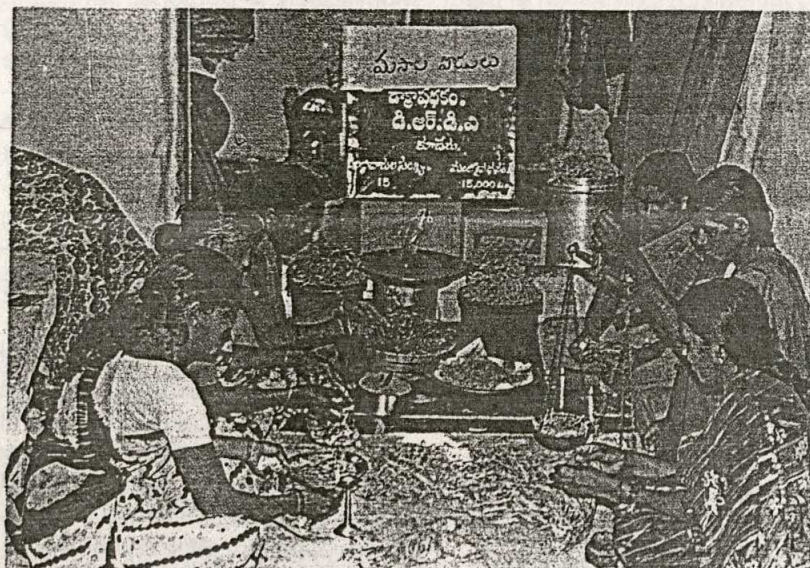


Table 1 : Growth of Micro-Credit in India

(Rs. In Crores)

Year	No. of SHGs	Bank Loan	NABARD Refinance
1992-93	255	0.289	0.268
1993-94	620	0.650	0.459
1994-95	2112	2.440	2.303
1995-96	4757	6.058	5.661
1996-97	8598	11.840	10.650
1997-98	14317	23.760	21.380
1998-99	32995	57.070	52.060
1999-2000	114775	192.870	150.130
2000-2001	263825	480.870	250.620
2002-2002	461478	545.46	395.72

Source : Karmakar (2002)

families, by 2005.

Indian Initiative

The first effort was taken by NABARD in 1986-87 when it supported and funded an action research project on "saving and Credit Management of Self Help Groups" of Mysore Resettlement and Development Agency (MYRADA). Then NABARD launched a pilot project to provide micro-credit by linking SHGs with bank in 1991-92. During the project period, some NGOs like Association of Sarva Seva Farms (ASSEFA), Peoples' Rural Education Movement (PREM), Professional Assistance for Development Action (PRADAN) and Community Development Society (CDS) have done excellent work in promotion of SHGs and mobilization of thrift and disbursal of credit. In 1999, RBI had set up a Micro-Credit Cell to make

and nurturing of self-help groups (SHGs).

Self Help Groups and Its Role

Self-Help Groups (SHGs) are usually informal groups whose members have a common perception of need and importance towards collective action. These groups promote savings among members and use the pooled resources to meet the emergent needs of their members, including the consumption needs. The number of members in SHGs is normally ranged from 10 to 20. It is expected that, within the group, there should be true democratic culture in which all the members must participate actively in the decision making process by taking part in the debate rather he should say discussion. Though the cohesiveness among the members would be increased due to homogeneity of the

als. It is obvious that collective work leadership with fixed tenure, mutual trust and cooperative philosophy would be the driving force for SHG. The basic objective of Self-Help Groups is to develop saving capability among the poorest sections of the society, which in turn reduces dependence on financial institutions and develop self-reliance. Earlier every poverty alleviation program initiated by the Government of India had failed in capacity building of the rural masses. Therefore, they became more and more dependent on financial support. At this moment, Government must realize that it would provide basic minimum facilities to the people particularly marginalized sections with primary education to all women, men and children, primary health, rural roads, safe drinking water, sanitation and strong public distribution system. The

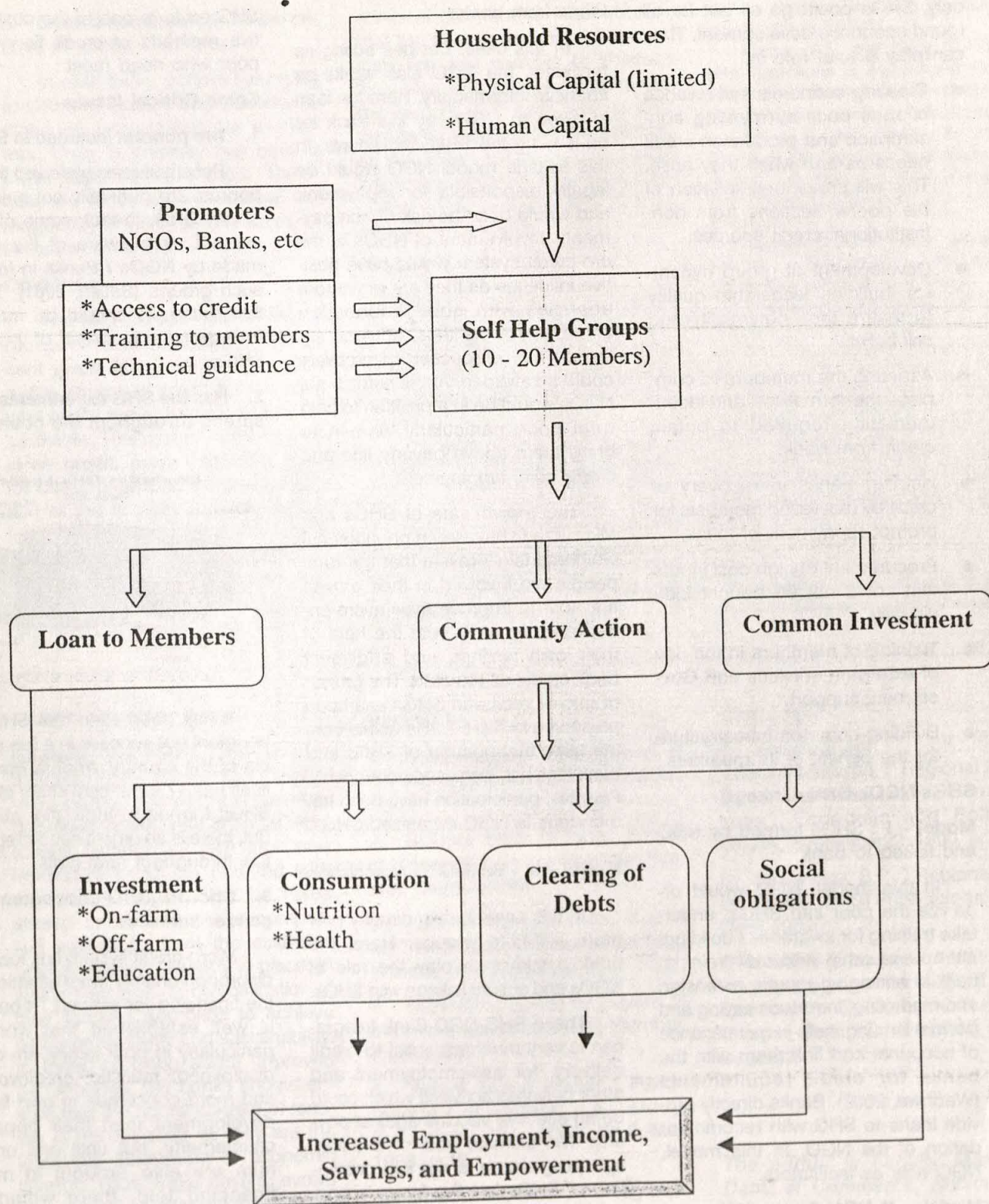


Fig.1 A Model of SHG – Bank Linkage
Source : Namboodiri and Shiyani (2001)

only, SHGs could go all out for all round economic development. They can play pivotal role in:

- Creating economic self-reliance of rural poor by meeting consumption and production credit needs as and when they arise. This will prevent exploitation of the poorer sections from non-institutional credit sources.
- Development of group dynamics, building leadership quality to realize their potentiality and self-belief.
- Assisting the members to complete the formalities and documentation required to obtain credit from bank.
- Helping banks in recovery of credit by motivating members for prompt repayment of loans.
- Procurement of high cost inputs that could not be bought individually.
- Training of members in the use of extension services and Government support.
- Building common infrastructure for the benefit of its members.

SHGs-NGOs-Bank Linkage

Model – I : SHGs formed by NGO and linked to bank

In this model, NGO would organize the poor into SHGs, undertake training for awareness building, entrepreneurship and skill training, help in arranging inputs, extension and marketing, introduce saving and internal lending, help in maintenance of accounts and link them with the banks for credit requirements (Wadhwa, 2002). Banks directly provide loans to SHG with recommendation of the NGO. In this model, NGO acts as facilitators.

Model – II NGO forms SHGs and perform financial intermediation role as on-lender to SHGs after sourcing

loans from bank.

In this case, besides acting as facilitator, the NGO also works as financial intermediary. Here the loan is given to NGOs by the bank for on-lending the SHGs/individuals. In this linkage model NGO would be legally responsible for repayment; and would bear the risk of non-payment. Involvement of NGOs in micro-credit system would have positive influence as they are grass-root agencies with good information about borrowers thus, adverse selection and production of recovery could be avoided. At the same time, NGOs would be in a position to help rural poor, particularly women to bring them above poverty line and create rural employment.

The growth rate of SHGs and Micro-credit have been phenomenal which certainly reveal that the rural people are involved in their growth are able to improve their micro-entrepreneurial skills with the help of their own savings and additional bank credit, as required. The growth of micro-credit and SHGs has been presented in Table 1. It is visible from the table that number of SHGs and bank loan has increased enormously. Peoples' participation have been tremendous in NGO organized SHGs.

Model – III - Bank-SHG Association

In this case, banks directly promote self-help groups. Here, the bank assumes to play the role of NGOs and ensure linkage with SHGs.

These SHG-NGO-Bank integration is very much essential to credit delivery, for self-employment and other business activities which could be an effective vaccine against poverty. The ultimate goal of this linkage programme is not just promotion of SHGs but the focus is poverty eradication. It is an established fact that micro-credit is an important means of poverty alleviation. The

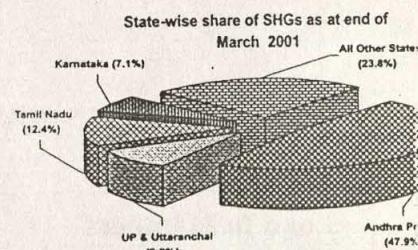
SHG route is one of the cost-effective methods of credit flow to the poor who need most.

Some Critical Issues

1. Are poorest included in SHG

Recent studies observed that the poorest are generally not members of any SHG. In fact, some of them are not even aware of the efforts made by NGOs / Banks in forming such groups (Satish, 2001). Therefore, attempts should be made to incorporate the poorest of poor SHGs.

2. Has the SHG experiments been spread throughout the country?



It has been seen that SHG experiment got success in a few pockets of the country. Andhra Pradesh itself has 47.9 per cent share of the SHGs formed in India (fig. above). But, there is an urgent need to spread this throughout rural India.

3. Should SHG movement be gender sensitive?

Micro-credit system has focused disproportionately more attention on the financing for women. Though it is well established that women, particularly in poor families, are more disciplined, realistic, creditworthy and more concerned in their own family development than their opposite counterparts, but until and unless men are also brought in the micro-financing fold, there would be a gender imbalance. Efforts should be made to make SHG movement gender neutral.

4. Should homogeneity be the criteria of group formation?

In rural India, people belonging to different castes, socio-economic status and occupations live in clusters. Unity in diversity has been a major aspect of rural India. Therefore, we must rethink whether homogeneity should be the basis of formation of SHGs.

Conclusion

The Micro credit - SHGs model has got tremendous attention in recent years. Micro credit is an alternative source of credit for the poor who earlier were considered as non-bankable. This system not only provides credit, most important input for development, to the poorer section of the society, but also aimed for their capacity building. It has also been observed that group lending has distinct advantage in the form of excellent recovery rate and improvement in income level. The phe-

nomenal growth of SHGs indicates that the weaker sections of the society are also capable to sharpen their micro-entrepreneurial skills with the help of their own savings and additional bank credit, as needed. At this point, micro credit - SHGs integration could be the way out for overall rural development vis-à-vis poverty alleviation.

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....contd. from 23

However, the RRBs have to play their role in the competitive environment particularly with the number of private banks and financial institutions coming out with their new innovative products coupled with technology up gradation. So, RRBs should be able to derive competitive advantage from the extensive branch network, already in place, in which they look for diversification of their lending portfolios to achieve better productivity and sustainability. In trying to bring about improved performance, the banks should ensure that the social content of lending is not reduced as they are the legitimate instrument of economic change. Thus, RRBs have to evolve an appropriate strategy to serve the rural poor and at the same time achieve sustainable viability.

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(This article is the revised edition of the paper presented in 55th All India Commerce Conference held at Udaipur, Rajasthan on 18-20 October, 2002)

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Swayamsiddha: For women, of women

22 AUG 2003

MARARA - TRA

BERALD PUNE

MHNewsService

Swayamsiddha is a voluntary organisation, which is dedicated to improve the secondary status of women by helping them in their struggle against sexual discrimination, inequality, atrocities and social customs detrimental to the fundamental rights of women. One of the main objectives of Swayamsiddha is to provide timely support in needy cases and to the women who are victims of atrocities and harassment. Further, along with the timely support, Swayamsiddha helps them to be independent and to gain their lost self confidence leading to self reliance.

In view of the above mentioned objects Swayamsiddha is running a full fledged legal and advice cell and mobile legal aid cell for women in distress in different parts of the city. Along with it the organisation has also conducted several legal awareness programmes in different places. One of the main questions remained unanswered is why most of women suffer atrocities by men even after they are supported by legislation, courts, police and NGOs. The main cause being the ignorance of laws and education amongst women at large.

Based on the above subject, Swayamsiddha is holding an eight day legal awareness generation camp for rural and poor women at Keshav Nagar, Mundhwa, supported by Maharashtra State social Welfare Advisory Board, from 27th July 2003 to 9th August 2003.

The eight day awareness camp for rural and poor women was inaugurated by Mrs. Shaila Ajit Gaikwad Sarpanch of Keshav Nagar, Mundhwa, on 25th July 2003 at first session women family disputes and issues were explained by Adv Madhumita Chaudhari, Chairperson

(Swayamsiddha). She further explained the necessity of reconciliation and counselling in family disputes. She explained that on trifling reasons if there is dispute between husband and wife then women activists, NGOs family members should try to reconcile by their counselling cell. She explained the necessity of counselling in trifling fights. The family social activists members must try



to work out this problem through counselling and meetings only. In violent cases, police help should be taken by the concerning parties.

Mrs. Madhumita Chaudhari emphasised more the women's problems and their secondary status in the society. Right from the beginning i.e. from her birth, she is differentiated from the male child. Female infanticide should be discouraged. Girls should be encouraged and allowed to get educated and she must be treated equally. After marriage, she must be seen as equal partner in the family by her husband. Women and health issues were also discussed by her. In the second session, Advocate Madhumita Chaudhari explained in detail the different laws related to

Before marriage both the parties should get a HIV test done. She further stated that in Pune city there are more than 70,000 patients who are HIV positive. The total treatment cost of the disease is Rs.30,000 to 1,00,000, which is not affordable for the lower middle class. She further stated that there is no vaccination for the same. She concluded that women should be able to make decision for avoiding intercourse with an HIV positive man.

"Women, HIV/AIDS and Social Obstacles" was the theme of the second part of the third session conducted by social activists and counsellors. Women are prone to get HIV from her husband, from blood transfusion, etc. Various precautions that a woman must take to avoid HIV/AIDS were discussed. Women lose support of the family, society, every where. She further stressed that woman must educate herself and must be strong enough to fight these obstacles and protect herself.

Social, economic, health and mental issues in relation to woman and HIV/AIDS were discussed at Large. Women and law was the theme of

4th session of the 8 days legal awareness generation camp for rural and poor women. Adv. Madhumita Chaudhari conducted the Fourth and Fifth session with the theme 'legal literacy'. Domestic violence, Ss 498 A & B (regarding Dowry) were explained at length. The existing laws to combat violence against women were discussed. Rape laws and new amendments were discussed. Women and succession acts were also discussed. legal History, maintenance Divorce Laws under Hindu marriage Act, Muslim Acts and also Christian Laws were discussed. Child custody Act, Police Procedure court procedure were also thoroughly explained by Adv. Choudhari.

(To be continued on next Friday)

Women entrepreneurs are on the rise. They are increasingly making their entrepreneurial presence felt in hitherto male bastions such as the industrial, trading, service and other sectors. Not wishing to ignore the trend, the government appears to be earnest to give these women an opportunity to stand on their feet. In keeping with the policy of encouraging women entrepreneurship, the Industries department of the Government of India has set up a special women entrepreneurs' cell. The cell ensures that certain benefits are made available to women entrepreneurs through its many wings and departments:

- For display of items manufactured by the Women Entrepreneurs, space is reserved in all National Level Exhibitions/Trade fairs.
- One time interest subsidy with a ceiling of Rs. 20,000 is provided to woman entrepreneurs by the Industrial Financial Corporation of India through the State Financial Corporation.
- Plant and machinery is supplied to woman entrepreneurs by the National Small Industries Corporation Ltd under its Hire purchase scheme at a concessional rate of interest and a service charge, which is one percent less than the general category.
- Training to women Entrepreneurs on various areas such as skill development, entrepreneurship development, product and process orientation training, management training, marketing management programmes etc. are also provided by the Small Industries Development Organisation through its net work of Small Industries Service Institutes.
- For recognition of excellence among first generation Entrepreneurs, special prize is given to outstanding women entrepreneurs consisting of a cash prize of Rs. 25,000 and a trophy given by the Govt. of India under its Scheme of National awards to small-scale entrepreneurs from the year 1993.

Want of encouragement there appears to be none, in so far as the schemes and policies of the government are concerned. The accent, evidently, is on small-scale units. Following are some of the financial schemes being made available to women entrepreneurs:

- Mahila Udyam Nidhi: For small entrepreneurs, for setting up new projects in tiny/small scale sector and rehabilitation of viable sick SSI units. The scheme is operated through SFCs / twin function SIDCs/Scheduled Commercial Banks/Scheduled Urban Cooperative Banks. The cost of the project should not exceed Rs.10 lakhs. The soft loan limit is 25% of the cost of project subject to a maximum of Rs. 2.5 lakhs per project.
- Scheme For Women Entrepreneurs: For setting up Small Scale units. The scheme also provides for training and extension services support to the women entrepreneurs.
- Prime Minister's Rozgar Yojna: Preference is given to women and weaker sections of the society. The loan amount is up to Rs. 2 lakhs. There are no collaterals and the interest rates are low.
- The Margin Money Scheme of Khadi and Village Industries Commission: This scheme is applicable to all new village industry projects set up in 'rural areas'. The eligible projects must not exceed the ceiling amount of Rs. 10 lakhs for individual entrepreneurs and Rs. 25 lakhs for institutions, cooperative societies etc. The margin money grant is at the rate of 30% of the project cost up to Rs. 10 lakhs for women and other weaker sections.

Interestingly, a research was conducted on women entrepreneurs in the Rayalseema region of Andhra Pradesh. The study was undertaken in partnership with researchers from Canada and India. The study indicated that most women entrepreneurs here started out in the thirties.

These were largely married women belonging to low-income group families. Unmarried women faced more difficulties in getting financial assistance for their projects. It emerged that women from the low-income group exercised more freedom in making a decision to start the business as compared to middle class women who suffered from cultural constraints.

The research further revealed that there weren't enough support systems to effectively handle their important needs for vision and confidence building and for developing better business orientation and skills. What's more, gender bias was perceived to be a very strong deterrent to aspiring entrepreneurs.

Obstacles, no doubt, there are plenty. There is the usual problem of officialdom of course, which the AP government apparently proposes to correct with its e-initiative of introducing online registrations. Then there

ing finances, experience-sharing opportunities and so on.

A woman in her mid thirties is at the right age to handle the rigours of entrepreneurship maturely. Ms. Rama Devi, President of ALEAP, opined that the pressures of running a house and raising children would have lessened considerably by this time so as not to make unusual demands on her time.

Ms. Girija, an entrepreneur and a member of ALEAP, however warned that one must be ready to make a few sacrifices as well. 'It is not a bed of roses and support of the family is absolutely essential,' she said.

Examples abound of successful women entrepreneurs like B. Sailaja who runs a wildlife resort named 'Dyna' in Kanha, Madhya Pradesh. Very happy with her line of work, she feels support of the family is very vital to success.

She does not feel that being a woman has brought any special advantages or disadvantages her way. Similar are the sentiments of Durga Bhavani, who runs a trading unit for diagnostic kits. Set up almost nine years ago, her company recorded a turnover of 1.5 crores last year.

The difficulties that she faces in running her business are typical to her line of work, she says, and not gender related at all. If anything her being a woman has only served to generate more goodwill and trust among her clients, who respect her efficiency and competence.

Married or unmarried, educated or semi-literate, it hardly seems to matter much anymore, it is the entrepreneurial zeal, perseverance and determination that are needed to make it out there. In the words of Ms. Rama Devi, 'Entrepreneurs can be made, with proper motivation, encouragement and interaction.'

WOMEN

... entrepreneurs in andhra pradesh

Pujita K Jyoti

is the difficulty of convincing the bankers to finance a project also. All these factors make the prospect of starting a business a formidable one.

The good news however is the presence of the Association of Lady Entrepreneurs of Andhra Pradesh, (ALEAP) which helps women entrepreneurs tackle just such difficulties. Located in Banjara Hills, Hyderabad, this organization has been in existence for the last 10 years, actively supporting women entrepreneurs in every way possible.

Apart from free counseling offered to interested individuals, a 45 day training programme called Entrepreneur Development Programme is also conducted by ALEAP, which covers areas such as motivation, project ideas, technical guidance, market surveys etc. A member of ALEAP can avail of many other benefits, which include use of incubator machines, assistance in seek-

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WHERE BUSINESS FINDS MORE BUSINESS

'Education for girls still a challenge'

DECCAN HERALD

26 AUG 2003
From Shruba Mukherjee
DH News Service

NEW DELHI, Aug 25

Expressing concern about the fact that 35 million girl children were still out of school, the Parliamentary Committee on Empowerment of Women has said free and compulsory elementary education for girls remained a major challenge in the country.

The Committee in its 14th report, which was tabled in the recently-concluded monsoon-session of Parliament, said in spite of the provisions of the Constitution and the efforts made by successive Governments it has not yet been possible to universalise elementary education.

"Although female literacy has improved to 54.16 per cent in 2001 from 39.2 per cent in 1991, it is quite low as compared to that of 75.85 per cent in respect of males in 2001.

"In absolute numbers, female illiter-

ates continue to be much higher than male illiterates," the committee headed by senior Congress MP Margaret Alva said.

The committee noted that problems relating to drop-out rates, low levels of learning achievement, lack of adequate participation by girls from tribal and disadvantaged groups still persisted.

In the opinion of the committee, female literacy rate was low due to gender inequality, social discrimination and economic exploitation coupled with high drop-out rates for girls.

Stating there was an urgent need to remove the constraints that led parents to keep their daughters out of school, the report called for a massive awareness programme in the educationally backward areas of the country.

The committee recommended orientation of policies in other sectors for providing support and facilitating access to services like pure drinking wa-

ter, fuel, fodder and crèches thus freeing the girl child from the drudgery of household chores and helping her attend school.

Expressing concern about the under-utilisation of funds allotted for secondary education in each of the years from 1995-96 to 1999-2000, the committee asked the Department of Secondary Education to remedy the situation.

"It is strange that while on the one hand experts recommend increased allocation for education, on the other funds earmarked for secondary education have remained unutilised," the report said.

"The committee feels that the need for superior academic achievement is greater for girls as compared to boys as the future of the girl child rests squarely on her educational achievements and economic independence and are intimately linked to her educational advancement," it adds.

to fight against dowry

Enact law for compulsory registration of marriages: SC

By Our Legal Correspondent

NEW DELHI, AUG. 25. The Supreme Court today suggested to the Centre to enact legislation for compulsory registration of marriages in the country to prevent the menace of child marriage taking place in many States.

A Bench comprising the Chief Justice V.N. Khare and Justice S.B. Sinha asked the Additional Solicitor-General, Mukul Rohtagi, to indicate to the court in six weeks whether registration of marriage could also be made compulsory by amending the Hindu Marriage and Special Marriage Acts.

The Bench gave this suggestion during the hearing of a petition filed by Forum for Fact Finding, Documentation and Advocacy highlighting the plight of young girls being married off by their parents even

before they reached the age of puberty.

The Bench opined that one way of curbing the practice was to make it mandatory for all to register their marriage under which one was obliged to give their age at the time of marriage.

Appearing for the petitioner, advocate Colin Gonsalves cited the example of Sri Lanka where after the registration of marriage was made mandatory, the marriageable age of girls had gone up by three years.

He said the Collector and the Superintendent of Police should be made accountable for the enforcement of the ban on child marriage provided under the laws.

The petitioner said that when a girl was married off at an early age, she becomes an object of exploitation, both sexually and physically by her in-laws.



ILO guidelines on women's working conditions soon

The Hindu

BUSINESS LINE

27 JUL. 2003

Our Bureau
Kolkata, July 26

BASED on a recent Supreme Court order on the condition of women in the workplace, the International Labour Organisation (ILO) will soon come up with specific guidelines on the subject, according to Mr Herman van der Laan, Director, ILO. He was addressing members of the Indian Chamber of Commerce at an interactive session on the Global Compact, which was first proposed by the UN Secretary-General, Mr Kofi Annan, in January 1999.

The Global Compact is not a regulatory instrument or a code of conduct but a "value-based platform designed to promote institutional learning". The Compact encompasses nine principles drawn from the Universal Declaration of Human Rights, the ILO's Fundamental Principles on Rights at Work, and the Rio Principles on Environment and Development.

Mr van der Laan said: "The ILO is closely studying the verdict and will soon issue specific guidelines on the working conditions of women. We will try to see that these conditions are followed by the employers," he added.

Regarding Global Compact, he said companies all over the world had to try to introduce positive changes in the realm of their business operations. An effort had to be made to maintain the globally accepted human rights of workers, suppliers and consumers.



For the labour force, there should be the freedom of forming trade unions and collective bargaining. The environmental issue was another crucial aspect of the Global Compact. He added that the elimination of child labour was another "critical issue". Though there is no case of child labour in the organised Indian industrial sector, still there are innumerable cases in the unorganised sector, he said.

Mr Rajen Mehrotra, ILO's senior specialist on employers' activities for South Asia, said that the Global Compact would soon become a necessity for leading corporate houses. According to him, the Global Compact "was a part of modern day corporate social responsibility, where companies are looking at three sets of bottomlines. The first is economic, comprising net profit, cash flow and shareholders value. The second is environmental which can maintained with the ISO 14000 certification. The third is

social profitability, which cannot be measured by any parameter", Mr Mehrotra added.

In South Asia, India has the largest number of corporate houses accepting the Global Compact. More than 86 companies have been implementing it. However, responding to a query from a chamber member, Mr van der Laan ruled out the formation of any watchdog sort of a body for the Global Compact.

He also announced that in January 2004, the World Social Forum would be held in Mumbai. This is the first time that the forum is meeting outside Brazil. Mr van der Laan urged employers to participate in the forum in large numbers.

He was also critical of the Special Economic Zones in the country. "All sorts of workers' rights are being flouted in these zones and it is not by default but by design. The ILO is concerned about workers' plight in these zones", he said.

Round-the-clock helpline to help women in distress

MAHARASHTRA HERALD, PUNE

MUMBAI, Jul 21

Central Social Welfare Board has set up a round-the-clock helpline for women in distress undergoing atrocities at the hands of men at home, offices or any other place.

The helpline operates on all MTNL centres and the number allotted is 10920, a toll free number, according to a release from the board here.

A person in distress can call up this number from any where without making any payment.

At present the government has

selected four places which would function as helpline centres, in Mumbai. One of the centres is Sukh Shanti, a home for destitute women in suburban Mankhurd, run by Association for Social Health in India.

When a women in distress calls up the helpline number, the person on the other side, herself a women, would guide her and help in taking remedial action.

NGOs and Mahila Mandals would also be alerted by the helpline centres to help the women in distress.

(PTI)

Vocational course for girls in rural schools to be introduced

NEW DELHI, Aug 22 — Concerned over large dropouts of girl students in rural schools, Government today said it was planning to introduce handicraft, music and vocational course alongside the regular curricula to arrest the trend, reports PTI.

"We are aware of the requirements of the parents in rural areas and we are trying to bring in multi-purpose education in schools there", Human Resource Development Minister Murli Manohar Joshi told Shabana Azmi during Question Hour.

Joshi said government will also come out with a package of incentives for girls pursuing college education. Steps would be taken to encourage Madarsas to retain girl students through various programmes, he said.

As per the 2001 census, female literacy rate has increased by 14.8 percentage points to 54.15 per cent. He said as per the National Sample Survey Organisation 1999-2000, the Muslim female literacy rate in the country is 62.2 per cent for urban areas and 42.1 per cent for rural areas.

Minister of State for Human Resources Development Sanjay Paswan said the government targeted retaining girl students by 2008 through various programmes at the elementary level.

Joshi said to encourage girl students, the government was working towards providing them with female teachers from their caste and community in schools close to their homes.

In reply to a query, the Minister said the mid-day meal scheme for schools was progressing satisfactorily and that ISCKON had been entrusted with providing cooked meals for one lakh students.

As many as six lakh schools in the country were implementing the free mid-day meal scheme, the Minister said.

Welcome, but...

Registration of marriages alone won't help to prevent child marriages.

28 AUG 2003 DECCAN HERALD
The Supreme Court has suggested that the Government could consider enacting a law to make registration of marriages compulsory as it might help to prevent child marriages which are widespread in several States. The suggestion came up during the hearing of a petition by a voluntary organisation fighting against child marriages. Since it is mandatory to mention the age of the bride and the groom in the registration papers, it would deter the elders from marrying off the children. While compulsory registration of marriages, like that of births and deaths, would be a step forward in introducing order in the functioning of society, it would mean missing the wood for the trees as far as child marriages are concerned. Marrying off children, especially girls, before they reach puberty or immediately afterwards, is a manifestation of the low status occupied by women in our society.

Marriage is considered the natural, necessary destination for daughters and it serves as a legitimate means for the family to transfer its social and economic "burden" to another family, and thus fulfil its "duty." The earlier the better, would seem to be the argument of the parents. They are either ignorant of the tragic consequences on the mental, emotional and physical well being of the girl or choose to ignore them, being slaves to social conditioning. Registration of marriages is important as an instrument of legal empowerment of women but it does not facilitate social empowerment of parents or improving the value of daughters, two crucial factors necessary for an improvement in the status of the girl child. Education has been an acknowledged facilitator in improving the status of the girl child.

But when daughters of urban, relatively better educated and better off families too are married off immediately after completing high school for reasons similar to those of the poor, illiterate families in villages, then it is time to take another look at why we have failed as a society and as parents in valuing our girls, why we do not see them as important as our sons, why we have not taught them to dream or why we have taught them to dream of only marriage and motherhood. True empowerment of the girl child would be in teaching them to achieve higher goals, to fulfil their potential, and to strive for the blossoming of their talent. While the Government should facilitate the empowerment of society to value daughters and women, parents should help their daughters to realise their dreams.

50 YEARS OF THE CENTRAL SOCIAL WELFARE BOARD WOMEN'S DEVELOPMENT AND CHILDCARE

ESTABLISHED : 1953

THE HINDUSTAN TIMES

8 AUG 2003



Prime Minister of India

Message

The Central Social Welfare Board is working with dedication for the welfare and development of women, children and the disadvantaged sections of society. Owing to the efforts of the Board a nationwide network of voluntary organisations has been created, which has helped in the implementation of several social interventions. The Board is doing commendable work by giving grants to voluntary organisations for various programmes of social development such as Mahila Mandals, women's education and vocational training, child care, counselling and public awareness. I am confident that the Board will continue to make significant contribution to the noble task of national progress.

Atal Bihari Vajpayee



Union Minister
Human Resource Development

Message

In the last 50 years, the Board has gained in depth understanding of the importance and usefulness of voluntary organisations. Today, the banyan tree of voluntary organisations, which is spreading throughout the country, is the direct result of the Board's untiring efforts. The structure of the voluntary sector that can be seen today carries the indelible stamp of the Central Social Welfare Board. The Board has an extremely important role in the development of women and children through the medium of voluntary organisations. The Board is an agent of social change. In this respect new dimensions are being added to its role.

On this memorable occasion I extend my heartfelt felicitations and good wishes to the Chairperson of the Board, its members and all its employees. The Government will continue to give recognition and co-operation to the Board.

Dr. Muri Manohar Joshi



Minister of State
Women & Child Development

Message

More effort is needed to bring change in the social sector, at the same time social co-operation is also necessary. For this, women will have to come forward in a big way. The officers and employees of the Central Social Welfare Board have to create their own special identity in society. They have to win the confidence of society by becoming social workers, not as government employees. Only then the Board will achieve its goals.

With best wishes

Jaskaur Meena

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- Empowerment of women through education and training in far flung and backward areas
- Awareness generation against exploitation and atrocities upon women because of traditional attitude and social evils, making women self-reliant national citizens
- Counselling for lakhs of families and care of lakhs of children in creches

The task of the Central Social Welfare Board and its 32 State Boards, 20 thousand voluntary organisations is not yet over. Forward, forward and yet forward we march.....!



Chairperson
Central Social Welfare Board

Message

At this important milestone of the Board's fiftieth year, learning from past experiences, the extended family of the Board and all its voluntary organisations resolve to work for a better future for women and children. We are grateful for your support. We hope to get your co-operation in the future also.

Mridula Sinha

We will always need your support
and cooperation
The entire CSWB family is with you



CENTRAL SOCIAL WELFARE
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Main Programmes of the Week

- 8th August a. Journey of 50 years: Inauguration of exhibition
Venue – Samaj Kalyan Bhawan
b. Interaction with beneficiaries of Condensed Course Programme
- 9th August Workshop
Venue – Samaj Kalyan Bhawan
- 10th August National Conference of 400 members of State Boards
- 11th August National Conference of Field Officers
Valedictory function of Golden Jubilee Year (Vigyan Bhawan)
Presentation of Dr. Durgabai Doshmukh Award 2002
Release of important publications on Golden Jubilee

(Note – the exhibition will remain open for three days)

India's urban slums

By Prem Shankar Jha

Mr. Atal Behari Vajpayee struck a note of satisfaction in his Independence day speech, and with good reason. The Indian economy is doing well. The country's coffers are full of foreign exchange. Inflation is minimal. The monsoon rains this year are the best ever. An industrial recovery may be getting under way. Share prices have risen by almost 40 percent in the last four months. But to his credit, that instead of dwelling on these 'achievements' he chose to elaborate on his Government's schemes for generat-

growth of employment from 2.04 per cent per annum between 1983 and 1994 to less than one per cent in the decade after 1992. This is barely a third of the rate of growth of new job seekers. The situation in the organised sector is even worse. For against a growth of 2.1 per cent per annum in the 1970s and 1980s employment has actually been shrinking during the past four years.

A burst of investment in the infrastructure will not only create new jobs but, as the Golden Quadrilateral project has shown, will boost the demand for steel, cement and various kinds of machinery. This will further strengthen the revival in the 'old economy' where most of the present employment is to be found.

However, in trying to address unemployment directly he is still treating the symptoms of a problem and not the problem itself. The real problem is the high, and rising, fiscal deficit of the Central and State governments. At 11 per cent of GDP it is pre-empting fully one third of all private savings in the country and using it to finance government consumption instead of public and private investment. Since it is investment and not consumption that creates jobs this amounts to robbing the young of their future.

The consequences of India's rising fiscal deficit have been highlighted time and again. The

most obvious is the shortage of power, the alarming rise in railway accidents and the growing congestion in ports. But these are only the visible tips of the fiscal crisis. Far greater damage is being done in areas that the public is not even conscious of.

One such area was highlighted by the Delhi-based Centre for Science and Environment, whose tests showed that the country's leading soft drinks manufacturers did not bother to treat the water they used to eliminate lead and pesticides. Sanitation and water supply suffer the most because they come at the bottom of the Government's list of priorities. But every other facet of shelter — housing, health and education — is in a similar deplorable state. Three out of five residents of Mumbai now live in slums and shanty colonies. Even the media have long since stopped bothering about their plight. The result is writ large upon the face of the country. India has become a 'dormitory nation' akin to dormitory townships, from which its best and brightest set out to work in metropolitan capitalist countries, and never return.

Had the fiscal deficit been smaller there would have been a great deal more to spend on improving the quality of life. The irony in the situation is that shelter education and health are also the sectors that generate the largest number of jobs.

LOOKING AHEAD

ing employment. Pointing out that the 'Golden Quadrilateral' highway construction project to link Delhi, Mumbai, Chennai and Kolkata with a four lane highway has given employment to three lakh people, he announced a slew of infrastructure projects that will create millions of jobs in the coming years.

His concern is belated but welcome. The crash economic liberalisation of 1991 suddenly laid bare the true magnitude of the country's failure to generate jobs for its new entrants to the labour market. Competition and the increasing bankruptcy of the Central and State governments, brought down the rate of

Living Environment and Health of Urban Poor A Study in Mumbai

This paper presents and discusses primary data from a survey of 1,070 households in four poor settlements in Mumbai comprising slum- and pavement-dwellers and squatters on the living environment and health conditions. The study attempts to examine the consequences of socio-economic and environmental factors in terms of income, literacy, sanitation and hygiene for morbidity. The needs of the urban poor and their priorities are seen to be hierarchial. They need first assurance of being allowed to stay where they are and then provision of basic amenities of toilets, water supply, sewerage and drainage.

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Introduction

Urban population in developing countries has grown 6.8 times between 1950 and 2000 [UN 1996]. While it has merely doubled in the developed world in the corresponding period a rapid urbanisation has put tremendous pressure on existing infrastructure and public services; pollution too is on rise and most strikingly, the population of the urban poor is increasing in many developing country cities. Urban poor are largely understood as people living in overcrowded and dilapidated slums or in squatters built on pavements, along railway tracks, besides pipelines, under bridges, on ill-drained marshlands and any vacant land available to them, in the urban areas. Human living conditions in the absence of basic civic amenities such as safe and adequate water supply, sewerage and sanitation and toilets, has been precarious and miserable for the health, safety and comfort in such communities [Hardoy et al 1997]. Due to their unhealthy site location and living and working in pollution-prone environment, it is easily perceived that it is the urban poor who are bearing the brunt of increasing urban environmental problems.

Rural to urban migration has been observed as a major component of urban growth in developing countries, and most of the researchers converge on the opinion that both rural push (rural poverty related) and urban pull factors (city lights) are responsible for this phenomenon [Pernia 1994]. The genesis of slums in the cities, however, is mainly described under the purview of labour market principles, and models such as the Harris-Todaro and Stokes' theory [Pernia 1994, Mehta 1996]. A general observation, however, is that although a newly rural migrant may find it easy to enter the informal job sector in the urban areas, a bulk of such people fail to progress into high wage and formal employment sector. Consequently, the scenario develops somewhat into a shift of rural poverty into urban areas.

With the rise of the urban poor and degradation of human living environment in developing country cities, a number of notable studies and programmes have been undertaken by academia, government and international agencies in the last few decades.

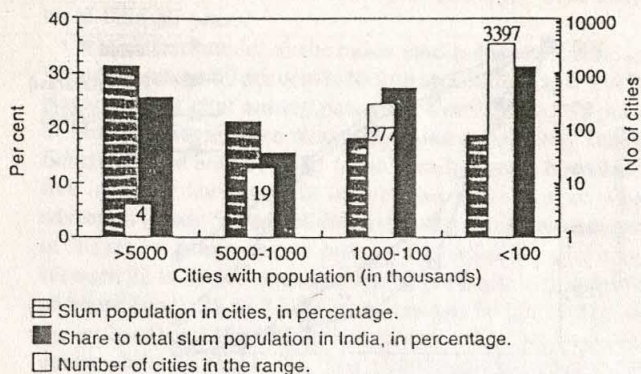
The World Bank, in particular, has been deeply involved in slum improvement programmes in many developing countries since 1970s [Werlin 1999]. The Asian Development Bank in 1995 carried out a comprehensive study on urban poor in Bangladesh to assist government design appropriate policy measures. Swaminathan (1995), has studied the poverty and environmental living conditions of urban poor in particular pavement-dwellers and slums in Dharavi. While many other studies present slum housing problems, environment condition and slum upgrading related policy analyses, fewer studies are found seeking to correlate the degree of health injuries caused by poor human living environment in urban poor communities. In a not completely conclusive study Asthana (1995) relates environmental condition to health status with reference to the slums in Vishakhapatnam, India. Singh et al (1996) has showed that higher incidence of environment related diseases occur in poorer families than in non-poor in a study conducted in Aligarh, India.

This study has been carried out on a relatively larger sample size, about 1,070 households, in four urban poor settlements in Mumbai city, comprising of slums, squatters and pavement dwellers, in order to study the environmental living conditions and consequent health impacts with particular emphasis on water and sanitation related diseases. The field survey works for this study was completed in the month of May 2000. The main objective of this paper is to present the primary data as obtained in the study as well as some critical analyses on social and environmental health situation of urban poor in Mumbai. Due to limitations in the scope of this paper, however, no attempt has been made to discuss slum policy and management aspects.

Slums in India and Mumbai

In India, the definition of slum is given statutorily under Slum Area (Improvement and Clearance) Act of 1956, which says, "areas where buildings are unfit for human habitation; or are by reason of dilapidation, overcrowding, design of buildings, narrowness of streets, lack of ventilation, light or sanitary facilities or any combination of these factors, are detrimental to

Figure 1: Slum Population in Indian Cities in 1991



Source: MUD, 1996.

safety, health or morals" [Chakraborti 1995]. Growth of slums in Indian cities seems phenomenal. Slum population in India constituted 17.5 per cent of urban population in 1981, which rose up to 21.3 per cent in 1991 and the trend has continued [MUD 1996]. The ratio of slum population to total urban population seems ever increasing in bigger cities. For example, the urban areas with population over 5 million (till 1991 they were Mumbai, Calcutta, Delhi and Madras) had, in average, 31.8 per cent slum population in 1991 as compared to 18 per cent in cities less than one million population (Figure 1).

Mumbai (formerly known as Bombay) is presently the largest urban agglomeration in India. With an estimated population of 18 million in 2000, it is the third largest megacity in the world [UN 1996]. It has also the highest absolute numbers of as well as the highest percentage of slum population in India. According to governmental statistics, slum population in Mumbai urban agglomeration (Greater Mumbai Municipal Corporation boundary plus adjoining suburbs) was 4.32 million (34 per cent of total) in 1991, which was estimated to rise up to 5.85 million by 2000 [MUD 1996]. Some literature, however, estimates this figure up to 7.5 million within the boundary of Greater Mumbai Municipal Corporation alone by 2000 ([Sharma and Narender 1996]. Slums in Mumbai are scattered all over but a general distribution is 17 per cent in Main Island City, 46 per cent in inner suburbs and 37 per cent in further extended suburbs [Afzulpurkar 1995 in O'Hare et al 1998].

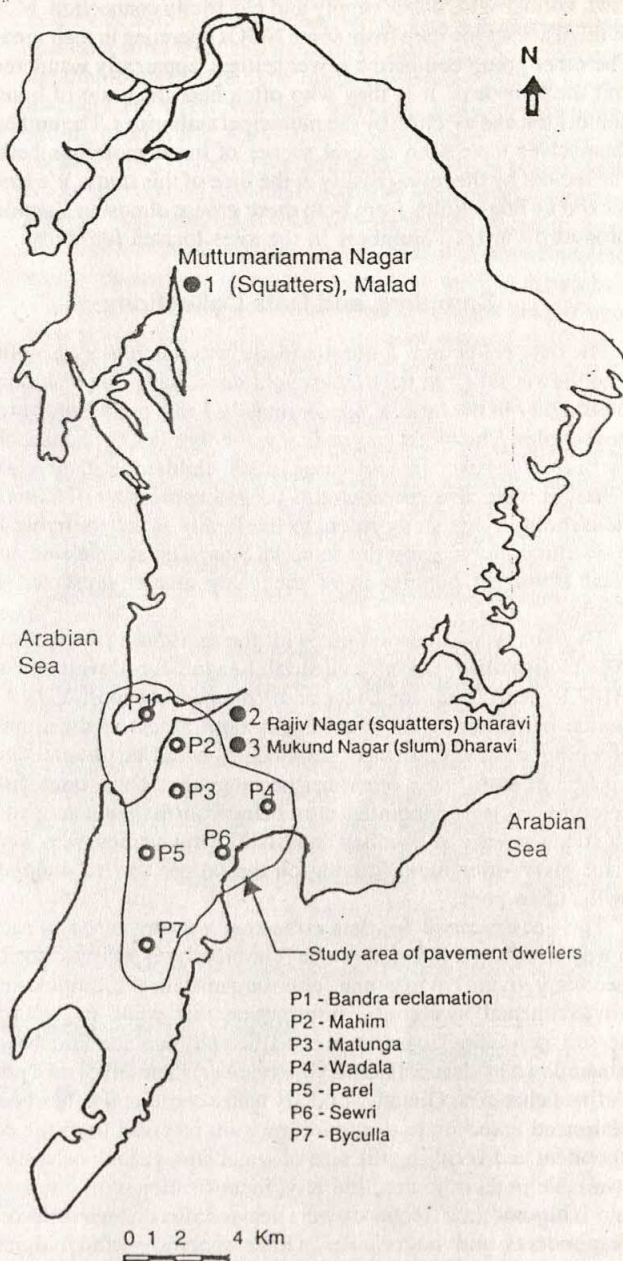
Study Areas and Methodology

Study Sites and Characteristics

Four different urban poor settlements of Mumbai consisting of: one slum, Mukund Nagar of Dharavi; two squatters, Muttumariamamma Nagar at Malad and Rajiv Gandhi Nagar of Dharavi; and pavement-dwellers from around Bandra, Mahim, Matunga, Wadala, Parel, Sewri and Byculla, were chosen under this study (Figure 2).

Muttumariamamma Nagar is a squatter settlement in Malad, a rapidly growing northern suburb in the northern fringes of Mumbai and has seen a flourishing real estate business. It is settled adjacent to a filthy drainage channel and the entire terrain is low lying, prone to frequent flooding during rain. Mukund Nagar (MN) and Rajiv Gandhi Nagar (RGN) respectively are two slum and squatter communities belonging to Dharavi. Dharavi is notoriously famous for assuming the status of being the largest slum

Figure 2: Map of Greater Mumbai and Location of Study Sites



in Asia [Desai 1988]. It is, in fact, an agglomeration of several small slum communities that has expanded over an area of about 2.1 km² and inhabited by over 5,00,000 population. Mukund Nagar and Rajiv Gandhi Nagar, possess a characteristic difference in the sense that the former is a slum, situated in the core zone of Dharavi and inhabited by relatively older and better off families, while the latter is a newer squatter settlement built over the Mahim creek bounded by the Sion station road and Nayak Nagar Road.

Pavement dwellers surveyed in this study were from central region of Mumbai. Based on the living condition and their legal status, they could also be categorised in two groups. One are the relatively old settlers who have been recognised and tolerated by the government. Apparently their housing conditions are

relatively better and they enjoy some privileges such as ration card, voting right, water supply and electricity connection. Most of them also enjoy care from some NGOs operating in their areas. The other group comprises newer settlers, apparently wanderers and the homeless. It is they who often bear the brunt of house demolition and eviction by the municipal authorities. The authors themselves have seen several scenes of hut demolitions being carried out by the municipality at the time of this study. We have picked up households from both these groups almost in a similar proportion to their numbers in the sites located for study.

Sampling and Data Collection

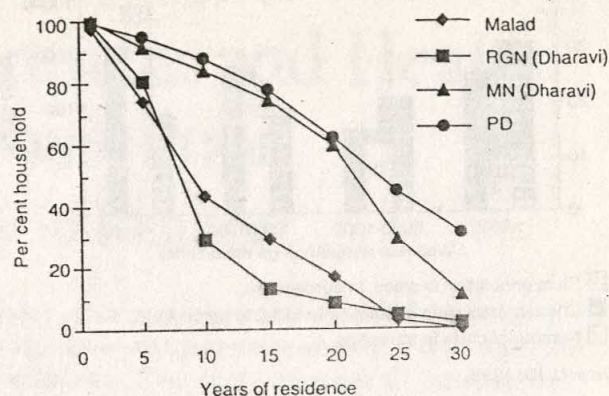
For data collection, a questionnaire was administered by the interviewer taken at each household door. Sampling was done thoroughly in the ratio of approximately 1 in 5 of the study area households. The target respondent was either head of household or his/her spouse. In few cases, adult children or their close relatives were also considered if judged appropriate. The term household in this study refers to the family members living in a dwelling and sharing the same kitchen. The sample size and total estimated population of the study area is presented in Table 1.

The survey was carried out with the assistance of two local NGOs (Bombay Urban Industrial League for Development, BUILD; and Youth for Unity and Voluntary Actions, YUVA), which particularly facilitated the smooth access to the slums. Keeping in view that target respondents could be illiterate and spoke (Marathi) or other native languages only, bona fide interviewers were appointed, most being from the graduate school of social science at Bombay and SNDT Universities, who were later given orientation training on the proper way of dialogue with urban poor.

The questionnaire for data collection was organised in such a way so as to get information on four broad perspectives: socio-economy, living environment, environmental health, attitude and environmental awareness. Information that could be self-assessed such as housing structure and their physical condition were noted down by data collectors (interviewer) themselves on a pre-defined checklist. Quantity of daily water consumption has been estimated based on both the information received from the respondent and verifying the size of water storage tank or vessels available in their home. Similarly, identification of true type of morbidity and their frequency were decided after dialogue between respondents and interviewer. Other specific methodologies, assumption and underlying procedures adopted in this study have been explained in the text wherever needed.

All data obtained from questionnaires were fed in MS Excel spreadsheet and SYSTAT 9.0 software package for subsequent analysis. Major statistical analyses performed are Pearson's correlation, Parametric hypothesis tests (one-way ANOVA),

Figure 3: Structure of Length of Stay of Slum Residents



non-parametric tests (Chi-square, Kruskal-wallis one-way ANOVA, Mann-Whitney U-test) and Kendall's coefficient of concordance.

Results and Discussion

Socio-Economic Profile

Migration and age of settlement: An immigrant in this study refers to those households whose head was born in an other place than the present residence in the slum or community. On that basis, percentage of immigrants appears to be about 90 per cent in Malad and Rajiv Nagar, 78 per cent among pavement-dwellers and 70 per cent in Mukund Nagar, Dharavi (Table 2).

Most of the immigrants in slums are from outside Mumbai. Of them 68-85 per cent are of rural (village) origin and more than 75 per cent primarily came to Mumbai for employment. The immigrants come from various places around India but one or few groups dominate in certain areas. For example 61 per cent households in Muttumariam Nagar have come from a certain part of Tamil Nadu. Similarly, a majority of people from Uttar Pradesh are in Rajiv Gandhi Nagar and from Maharashtra and Karnataka states at Mukund Nagar. Regarding pavement-dwellers, about 60 per cent are natives of Mumbai or from within Maharashtra. Most of the slum households retain connections with their native places, visit at least once a year and also host guests (from native places) frequently. The authors observed such guests in a number of families during this survey works. In general, such rural-urban linkages might have played a vital role in the expansion of slums by facilitating the easy access to slums by newer migrants and providing a sense of social support to settle in the slums.

The length of stay of households in a community reveals several aspects of dynamics of the urban poor. Although, the true age of the settlements cannot be ascertained from Figure 3, yet it reflects on the mobility, more specifically influx patterns, in a particular community. Surprisingly pavement-dwellers are found to be the oldest and more permanent residents among all urban poor, followed by Mukund Nagar slum and then the remaining two squatter settlements. About 31 per cent of pavement-dwellers appear to be living in such a state for more than 30 years, i.e., for more than a generation. Nearly 60 per cent households in Mukund Nagar have lived for at least two decades. But Muttumariam Nagar and Rajiv Nagar could be the newest, and probably still expanding ones, evident by the steady influx

Table 1: Population and Sample Size of Study Area

Settlements	Study Area Total (Estimated)		Sample Size	
	Household	Population	Household	Population
Muttumariam Nagar, Malad	1200	5700	312	1486
Dharavi, Rajiv Gandhi Nagar (RGN)	1500	7600	358	1822
Dharavi, Mukund Nagar (MN)	800	4300	114	611
Pavements-dwellers (PD)	unknown	unknown	286	1316
Total			1070	5235

of people in the settlement each year and none have lived for more than 30 years.

On such testimonies as the ration card holder and name in the voting list, about 60 per cent in Muttumariamamma Nagar and Rajiv Nagar, 68 per cent among pavement-dwellers and 95 per cent in Mukund Nagar have reportedly gained residency status.

Education and employment: Mean family size of households is five in all settlements. Not literacy but attainment of primary education (grade 5) and children attending school were surveyed in this study. Attainment of primary education is found to range between 22 to 53 per cent (average 33 per cent) in females (wife of house head), 38 to 72 per cent (average 56 per cent) in male (house head) and 46 to 90 per cent (average 70.2 per cent) among young children (Table 2). The 1999 statistical data of India presents the current literacy rate in India as 56 per cent (male- 68 per cent, female- 43 per cent) in rural and 80 per cent (male- 88 per cent, Female- 72 per cent) in urban areas [CSO 1999]. Although true comparisons cannot be made, the education level of urban poor appears nearly the same as in rural people but less than the average of urbanites. The pavement-dwellers have the least education of all. Analysing the various levels of education received by the head of the households, it was found that while 62, 49, 38 and 28 per cent people are illiterate or below primary education level; only about 1.3, 2.4, 6.7 and 17 per cent have attended college among pavement-dwellers, Malad, Rajiv Nagar and Mukund Nagar respectively (Figure 4). The data also show that 41 per cent households of pavement-dwellers, 29 per cent in Malad and 13 per cent in Rajiv Nagar weren't sending any of their children to school.

The three major occupations among main wage earners, i.e., of the house heads, are – as providing labour (free labour or regular workers in construction/factory), 41 per cent; service (clerical or technical job in public or private offices), 24 per cent; and business 26 per cent (Table 2). While almost half the house heads in Muttumariamamma Nagar and Rajiv Nagar, work as

labourers, the same proportion in Mukund Nagar are engaged in service and business respectively. This substantiates the fact that education level and location of residence have influence on the employment type. The major businesses run by pavement-dwellers are street vending, hawking, petty shopkeeping and selling handicrafts. Ratio of women engaged in earning jobs is about 53, 19, 25 and 30 per cent in Malad, Rajiv Nagar, Mukund Nagar and among pavement-dwellers respectively, however, in average 38 per cent of all work as housemaids (domestic worker). The higher ratio of working women at Malad is attributed to the greater opportunity of women orientated work in the vicinity of real estates. Among pavement-dwellers, ragpicking is another common occupation among 11 per cent males and 19 per cent females. For children (below age 16) employment ratio was found at 10, 4, 4.4 and 7.4 per cent in Malad, Rajiv Nagar, Mukund Nagar and pavement-dwellers respectively.

Income and poverty: Literature obtained in household survey data on income is often understated and hence obtained information does not necessarily truly reflect the actual income of the household [Islam et al 1996]. Alternatively, researchers frequently choose consumption expenditure as proxy income in poverty determination, but it is also not immune to weaknesses as sometimes expenditure met by loans or credit result in inflated expenditure. In this study, therefore, we followed a combined approach, that is the data on average monthly income and expenditures were interviewed separately and real income was considered as the higher of the two. This might have resulted in some positive biases in income calculation but the minimum percentage of household under poverty line could be better ensured. In calculation, income side made up the aggregate of average monthly incomes of all the members in a household. Similarly, the expenditure side consisted of monthly average expenses on food, land and house renting, utility charges, education, medical expenses, transportation, recreation, regular savings and an added 10 per cent for clothing and miscellaneous

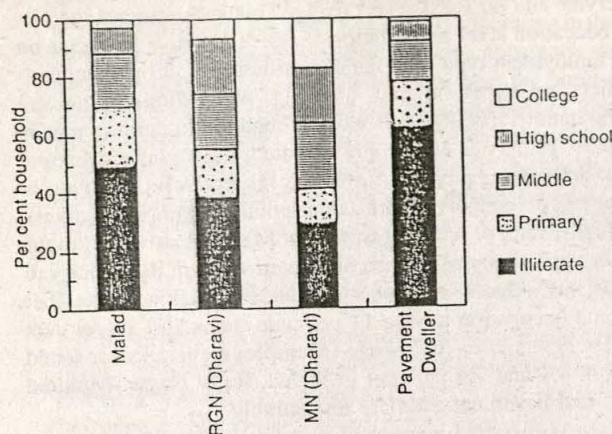
Table 2: Socio-Economic Profile of Urban Poor in Mumbai

Parameters	Malad	RGN-Dharavi	MN-Dharavi	Pavement-Dweller	Total
A Migration					
Immigrant to the city (based on househead's birth place)	89	90	69	78	82
Original place as rural (village)	68	84	71	NA	74
Employment as purpose of migration	86	77	73	83	80
B Household size, persons, mean	5 (2)	5 (2)	5 (2)	5 (2)	5 (2)
C Education: (at least grade 5 completed)					
Adult: male (main couple)	51.9	62.1	72.2	38.1	56.1
Female (main couple)	28.3	29.8	53.3	22	33.4
Average of main couple	39.2	46.2	62.8	29.3	44.4
Children: (attending schools or at least grade 5 drop out)	65.1	80.3	89.3	46.1	70.2
D Employment type					
Househead (male or female):					
Service (public or private office)	25	13	49	8	24
Own business	15	27	13	47	26
Bound labour (in factory/construction)	29	29	26	12	24
Daily wage labour (free)	22	22	7	18	17
Female (wife of male househead):					
working ratio	53	19	25	30	32
Labour as domestic work helper	62	27	32	32	38
E Income and expenditure					
Median household Income, Rs/month	3070	3185	4000	2695	3238
Share of expenditure on food items	50 (17)	56 (17)	53 (17)	57 (18)	54 (17)
F Households in poverty					
Food expenditures becoming more than 75 per cent of total income	3.9	7.8	8.3	13.5	8
Nutrition based poverty line income criteria*	38.5	37.8	29.9	47.9	38.5

Notes: All figures are in percentage unless specified. () standard deviation. NA- Not Available.

* Procedure adopted from Islam et al 1997.

Figure 4: Education Attainment of Heads of Households (Male)



expenses. On this basis, the median family income has been found as Rs 2,695 per month (Rs 32,340 per year) among pavement-dwellers to Rs 4,000 per month (Rs 48,000 per year), the highest, in Mukund Nagar (Table 2). The India Human Development Report, 1999, reports average monthly family income of rural people as Rs 29,929 per year in Maharashtra and Rs 25,653 per year in India [Shariff 1999]. The average income of other urban people could not be available but compared to rural people, these urban poor seem better off.

Regarding poverty, although this paper does not intend to go into deeper analysis, we analysed it for two basic scales of poverty measurement: per cent expenditure (of total income) on food items and poverty line income based on normative food requirement. The calculation procedure and nutritional norms for the latter was followed from Islam et al 1997 incorporating the commodity prices of Mumbai's retail market. This revealed poverty line income as INR 24 per person per day (INR 720 per person month). The families spending more than 75 per cent of their income on food is at the most 14 per cent in pavement-dwellers, others being less than this. However, the poverty line income criteria puts 39, 38, 30 and 48 per cent of households under poverty in Malad, Rajiv Nagar, Mukund Nagar and pavement-dwellers respectively (Table 2). The average of all

settlements, which comes to 38.5 per cent, appears comparable to urban poverty level in Maharashtra, 37.5 per cent, but little higher than urban poverty in India, 32.4 per cent, during early 1990s [IDR 2000]. Referring to Operations Research Group's (ORG India) estimate Swaminathan (1995) mentions that households under poverty was 27 per cent in Mumbai metropolitan region, 45 per cent among slum dwellers in 1989.

Environmental Living Conditions

Land and housing: Squatters in Mumbai are seen anywhere in public or private lands. Public lands mainly belong to three governmental authorities; municipality, Maharashtra state and the central government. Tenure in the squatters is of mixed type, some have occupied the land and built houses by themselves, others live as renters, but both illegally. The rent payers probably pay rent to the first occupier, proxy owner, without the notice of real landowner. In this study, 44 per cent households in Malad, 16 per cent in RG Nagar and 11 per cent in pavement-dwellers were found living as renters. However, 85-90 per cent squatter residents seemed scared of possible eviction and house demolition by government.

Housing in slums and squatters has both the anticipated problems of extreme congestion and bad condition (weak structure) of houses. More than 90 per cent households live in a single room tenement. The median floor area of houses is typically 10 m² (2.2 m² per capita) in slums and 8 m² (1.6 m² per capita) in pavement-dwellers (Figure 5).

Although Mukund Nagar is relatively better off in terms of household income and education level, the problem of congestion (overcrowding) remains. Streets are along gullies made for sewage and storm water drainage, which can be hardly one metre in width. Condition of housing was assessed in terms of building materials and present livability condition. Depending on materials, the houses were categorised as flimsy-made of clothes, plastics, cardboard and bamboo stems; semi-permanent-weakly fabricated with wood, tin, metal sheets and cement tiles; and permanent-building with cemented brick and reinforced concrete. Though conditions differs considerably from pavement-dweller to squatters and slum, overall 33 per cent houses are flimsy, 39 per cent semi-permanent type and 28 per cent cemented buildings (Table 3).

Table 3: Housing, Water Supply and Sanitary Condition in Urban Poor Community

Parameters	Unit	Malad	RGN-Dharavi	MN-Dharavi	Pavement-Dweller	Total
A Housing						
Single-roomed households	per cent	98	95	74	100	91.8
Housing space per family, Median (80p)	m ²	9.3 (14)	9.3 (14)	11.2 (19)	7.5 (11.2)	9.3
House type (structure):						
Flimsy (clothes, plastic, paper, bamboos)	per cent	31	37	0.4	62	32.6
Semi-permanent (wood, tile, metals)	per cent	46	32	47.6	29	38.7
Permanent (cemented brick and concrete)	per cent	23	31	52	9	28.8
B Water						
source as municipal tap water	per cent	100	100	96	99	99
Private tap connection	per cent	9.2	14	41	2	16.6
Median nos of households per shared tap	Nos	30	20	13	NA	21
Per capita water use quantity, Median (80p)	l/d	26 (42)	27 (50)	33 (50)	25 (42)	28
C Wastewater discharge						
Access to Sewer	per cent	0	0	6	0	1.5
Discharging in gutter or open outside	per cent	100	100	94	100	98.5
D Toilet						
Households using toilets	per cent	0	42* (64)**	97	56	51
Households practising open defecation	per cent	100	58* (36)**	3	44	49
Population load per toilet seat of public or community toilets, Mean	Nos	NE	129	93	101	108

Notes: NA- Not Available; * Male, ** Female; NE- Toilet not existing in the community.

Figure 5: Per Capita Housing Space in Urban Poor Settlements

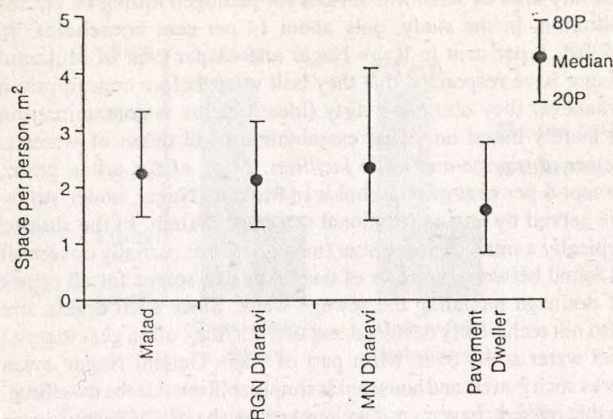
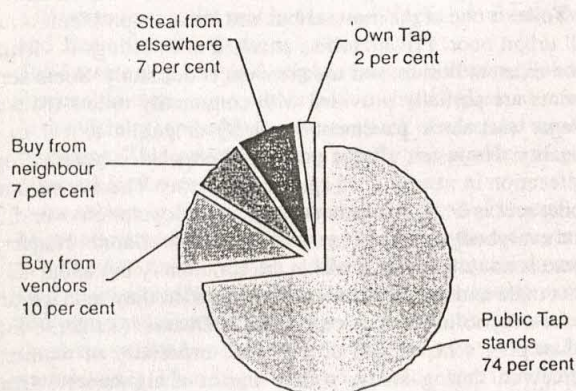


Figure 6: Water Source among Pavement-Dwellers



Water consumption and quality: Almost all households in slum and pavements rely on the municipal water supply for all purposes from drinking and bathing to kitchen and laundry. Metropolitan Corporation of Greater Mumbai (MCGM) is responsible for the delivery of water in Mumbai. Unlike in other civic resident quarters, water tap connections in slums is generally given to a group of households to be shared in common. The main reason, as learnt from an MCGM official, is that the housing conditions and area, which is too small, does not favour the individual tap connection. Therefore the set criterion is five households per tap connection. But in reality the number of households per tap is much higher. It couldn't be known if the situation was due to resident's own choice or authority's failure to supply taps in adequate numbers but, as per data obtained, median number of households sharing a tap is observed as 30 in Malad, 20 in Rajiv Gandhi Nagar and 13 in Mukund Nagar (Table 3). In contrary, however, about 10 per cent households in Malad, 14 per cent in Rajiv Nagar and 41 per cent in Mukund Nagar were also found having individual taps. Regarding pavement-dwellers, they fetch water in various manners and sources such as, 74 per cent from municipal stand posts, 10 per cent buy from vendors, 7 per cent buy from neighbouring house and remaining 7 per cent obtain it free either from neighbour or stealing from elsewhere (Figure 6).

Water consumption among urban poor, in general, seems extremely low. The median per capita daily water consumption has been found as little as 26, 27, 33 and 25 LPCD (liter per

capita per day) in Malad, RG Nagar, Mukund Nagar and pavement-dwellers respectively (Figure 7).

This figure is far less than the average consumption of Mumbai, i.e., 135 LPCD. Some literature mentions that this situation is likely under present biased water distribution norms of MCGM, which differs greatly across the geographical region and socio-economic groups. YUVA (2000) cites that MCGM has criteria to provide water at a rate of 45 LPCD to slums, 90 LPCD to chawls (lower middle class people's apartments with common bathroom and toilets) and 135 LPCD to flats (middle- to higher-class people's residence). And the tap connections and supply timing have been synchronised accordingly.

The water supply in slum and squatters under study is intermittent, which is usually only four hours a day between 6 and 10 am in the morning. Overall, a number of factors are apparent to aggravate the water scarcity problem in urban poor and consequent low consumption of water. For example, water supply hour is very less, users are too many to a tap, water storage capacity of the residents are limited due to small houses and lack of large vessels, etc.

Table 4: Point Prevalence Rate of Short Duration and Chronic Diseases among Urban Poor

	Short Duration Morbidity		Major (Chronic) Morbidity	
	Household with at least One Member Sick at the Time of Survey	Percentage of Persons	Household with at least One Member Sick at the Time of Survey	Percentage of Persons
Muttumariam Nagar	29	7.3	15	4
RG Nagar Dharavi	26	6.6	16	3.4
Mukund Nagar Dharavi	15	3.8	19	3.9
Pavement-dwellers	32	8.1	25	6.4

Table 5: Point Prevalence Rate of Selected Major Morbidity among Urban Poor

	Prevalence (Per thousand Pop)				Percentage Family Having at least One Patient			
	Malad	RGN	MN	PD	Malad	RGN	MN	PD
TB	13	9	6.5	18	4	4	4	7
Asthma/respiratory	7	8	6.5	11	3	4	4	5
Diabetes	2	2	3.3	9	1	1	2	3
Hyper-tension	0	4	1.6	4.6	0	2	1	2
Gastrics	4	2	4.9	3	2	1	3	1
Heart	5	3	0	3.8	2	1	0	2
Cancer	1	1	0	4.6	1	1	0	2

Table 6: Annual Cases of Select Water-Related Diseases among Urban Poor

	Total Cases Per Thousand Population Per Year			
	Muttumariam Nagar-Malad	Rajiv Gandhi Nagar-Dharavi	Mukund Nagar-Dharavi	Pavement-Dwellers
Diarrhoea	94*	287	334	614
Typhoid fever	36	38	46	68
Cholera	3	26	7	1
Hepatitis A/jaundice	15	30	13	68
Malaria	59	26	44	126
Poliomyelitis	3	0	2	2
Intestine worms	98	1	133	353
Skin diseases	77	167	31	68
Eye infections	24	38	47	79

Note: * This figure is unlikely lower (authors suspect possible manual error in this part).

Figure 7: Per Capita Daily Water Consumption of Urban Poor

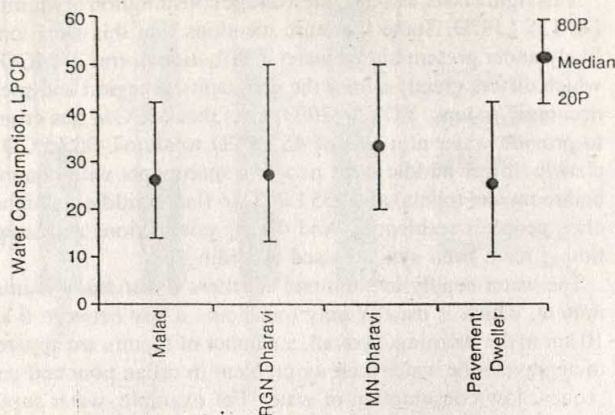
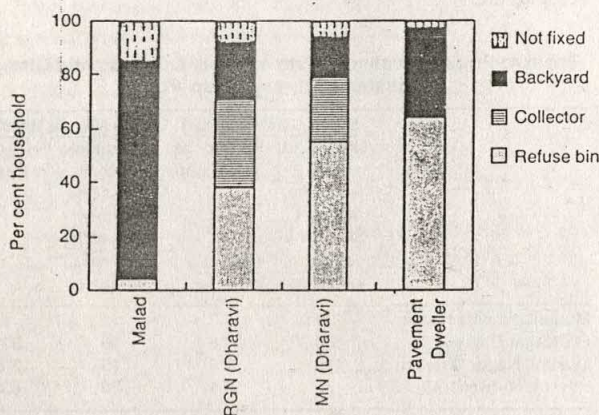


Figure 8: Solid Waste Disposal Practice in Urban Poor Settlements



Contamination of supplied water in the pipeline is also a problem in Mumbai. We examined few samples of drinking water from the taps in slums but could not detect bacterial contamination at the time. However, MCGM's laboratory data reports that 8-10 per cent of water samples taken at consumer's tap were contaminated by coliform bacteria and unfit for consumption in 1997 and 1998 [MCGM 1999]. In slums, none of the households

use any kind of scientific devices for pathogen killing or germs filtration. In the study, only about 14 per cent households in Malad, 5 per cent in Rajiv Nagar and 11 per cent in Mukund Nagar have responded that they boil water before consumption whenever they observe it dirty (identification of contamination is merely based on visual examination of dirtiness of water). *Sewer, drainage and toilet facilities:* None of the urban poor, except 6 per cent of households in Mukund Nagar, under study are served by any conventional sewerage system. In the slums, typically a small narrow gutter (mostly open or partially covered) is found between the rows of dwellings that serves for all types of drainage including the sewage water. Since such drains are also not technically designed and laid out, they often get clogged and water spills over. Most part of Rajiv Gandhi Nagar even lacks such gutters and households simply spill outside the dwelling. In this respect, pavement-dwellers seem to be in a bit better position because they enjoy large open space around or road curbside drain. About 30 per cent of pavement-dwellers responded that they discharged sewage into road side storm water drain.

Toilet is one of the most serious and common problems among all urban poor. Private toilets attached to dwellings is virtually non-existent in slum and squatters under this study. Some settlements are partially provided with community toilets (Mukund Nagar and some pavement-dwellers) or public toilets in the locality. However, a large portion of population practice open defecation in nearby open spaces and drains. There is no single toilet seat in Muttumariammar Nagar with population over 5,000 and everybody defecates in the open. In Rajiv Gandhi Nagar too, there is no toilet as such within the community but about 42 per cent male and 64 per cent female responded they manage to go to far-off public toilets in other parts of Dharavi (Table 3). Some urban poor's expression of the toilet, especially of women as perceived during study, simply meant a nightmare. Among pavement-dwellers, 44 per cent households practice open defecation. In Mukund Nagar, however, almost 97 per cent of the households have access to community toilet.

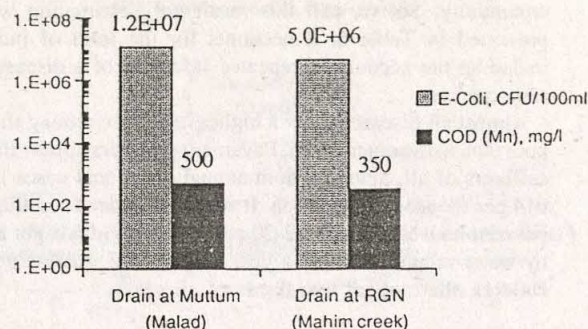
Public toilets in Mumbai have been provided by municipality (on municipal lands), NGOs (such as Sulabh International) and other citizen groups. But the demand always surpasses the supply. As per a report, BMC has so far constructed 12,612 (of them nearly 30 per cent are not functional) municipal toilet seats but the demand is in the range of 1,00,000 seats [Dsouza 1998].

Table 7: Results of ANOVA and Kruskal-Wallis Test

	N	DF	ANOVA			Kruskal-Wallis		
			F-ratio	Probability, Y, P	Null Hypothesis 1 Per Cent Significant Level	Test Statistic	Probability, p	Null Hypothesis at 1 Per Cent Significant Level
Per capita housing space								
All four settlements	942	3	9.131	<0.000	reject	39.61	<0.000	reject
Excluding PD (3)	693	2	3.344	0.036	accept	3.296	0.192	accept
Per capita water consumption								
All four settlements	1034	3	4.004	0.008	reject	16.5	0.001	reject
Excluding PD (3)	752	2	2.44	0.088	accept	8.233	0.016	accept
Population per toilet seat								
All four settlements	228	2	2.575	0.078	accept	2.343	0.31	accept
Excluding PD (3)	120	1	3.212	0.076	accept	1227.5	0.102*	accept
Family income								
All four settlements	1069	3	28.47	<0.000	reject	66.34	<0.000	reject
Excluding PD (3)	784	2	20.186	<0.000	reject	27.387	<0.000	reject
Literacy								
All four settlements	1070	3	48.52	<0.000	reject	126.29	<0.000	reject
Excluding PD (3)	784	2	29.592	<0.000	reject	54.853	<0.000	reject

Note: * Mann-Whitney U-test.

Figure 9: Water Quality in Two Drainage Channels in Mumbai



Consequently, existing toilets are overloaded. We attempted in estimating the actual number of users per toilet seat by interviewing some regular users in that locality. Although the replies varied greatly, median value showed as much as 93, 101 and 129 person per toilet seat in Mukund Nagar, pavement-dwellers and Rajiv Gandhi Nagar respectively.

Solid waste disposal and neighbourhood pollution: Solid waste disposal in slum came across both technical (lack of refuse bin in the vicinity) and socio-economic (lack of adequate awareness) problems. This paper, presents briefly the practice of garbage disposal in the study area.

As shown in Figure 8, more than 80 per cent households at Muttumariamamma Nagar throw garbage into the adjacent drain. When asked for the reason, while some 21 per cent households said no municipal bin was provided in the community, a majority (60 per cent households) have misconceptions (ignorance) that the drain (which has flowing water in it) is safe to do so. In other communities, 15 to 33 per cent households were found throwing garbage elsewhere than in the designated place. In respect of pavement-dwellers, although as much as 64 per cent households reported they throw garbage in the refuse bin, it seems unlikely that they really did so.

Neighbourhood pollution in this study was mainly dealt with in connection to the water pollution. In study areas, Muttumariamamma Nagar and Rajiv Nagar were two such sites right on the banks of storm drainage canals, but heavily loaded by sewage. Therefore we took the samples of drainage water and analysed it for some biological and chemical properties. As per the results, COD_{Mn} (chemical oxygen demand that measures content of

organic matters) and *Escherichia Coli* (indicator for fecal contamination) were found in the range 350 to 500 mg/l and 5×10^6 to 1.2×10^7 colonies/100 ml of water, respectively (Figure 9). This is a characteristic of sewage.

Environmental Health Conditions

Environmental problems and consequent public health impacts have been well studied and documented (for example, see Hardoy et al 1997; World Health Organisation reports). While pollution and poor sanitation are the root of several diseases, overcrowding, poverty and nutrition related factors lead to easy contraction and transmission. In this study, we collected data on short-duration (acute) morbidity and major (chronic) morbidity, both on point of time basis, and annual cases of some selected water-related diseases separately in all four urban poor settlements. Short duration diseases accounted for the illness of short and acute type, such as fevers, cold and coughs, and water-borne diseases. Similarly, major morbidity included chronic diseases such as tuberculosis, asthma, cancer and so on. The term 'water-related' envisages diseases under four categories; water-borne, water-washed, water-based and water-related insect vector as designated by Bradley [White et al 1972, Hardoy et al, 1997]. The illness reported in this study, however, was based on the respondents' used expressions that they had picked up from doctor, paramedical persons or by showing the lay symptoms but this doesn't necessarily constitute clinically confirmed cases. Although deliberate attention was paid, some biases could have been incurred mainly due to shyness of respondents in reporting some diseases.

Point prevalence of morbidity: Information on all types of morbidity (illness) occurring in the urban poor at the time of survey was collected and classified under short duration morbidity (SDM) and major morbidity (MM). The incidence of

Table 9: Urban Poor's Willingness Towards Resettlement

Slum	Households, N		
	Agree	Not Agree	Total
Muttumariamamma Nagar, Malad	220	71	291
Rajiv Gandhi Nagar, Dharavi	186	143	329
Mukund Nagar, Dharavi	53	55	108
Pavement-Dwellers	250	13	263
Total	709	282	991

Note: Chi-square (χ^2) test: DF=3, SL=1 per cent, Critical Chi-square = 11.34
Observed Chi-square = 137, Result: Significant.

Table 8: Urban Poor's Perception and Ranking of Problems (1-Most Serious)

Issues	Malad		MN, Dharavi		RGN, Dharavi		PD		Overall Rank
	Rank	Severity	Rank	Severity	Rank	Severity	Rank	Severity	
Toilet	1	ES	2	M	1	ES	3	M	1
Drinking water	2	M	3	L	2	M	4	M	2
Housing condition	4	M	4	L	3	M	2	M	3
Land ownership	3	M	5	L	4	M	1	M	4
Sewer and drainage	5	L	1	M	5	M	6	M	5
Poverty (food)	7	L	7	L	6	M	7	M	6
Unemployment	8	L	8	L	7	M	5	M	7
Solid waste disposal	6	L	6	L	8	L	8	L	8
Health care facilities	9	L	9	L	10	L	10	L	9
Social safety	10	L	10	N	9	L	9	L	10
Sample size, N=	90	309	22	114	75	343	45	276	4
Kendall's coefficient of concordance, W=	0.44		0.56		0.45		0.58		0.87
Three slums only, W=	0.92								

ES- Extremely Severe, M- Moderate, L- Little, N-No problem.

Figure 10: Type of Short Duration Morbidity among Urban Poor

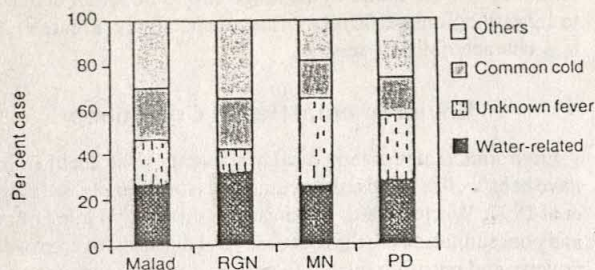
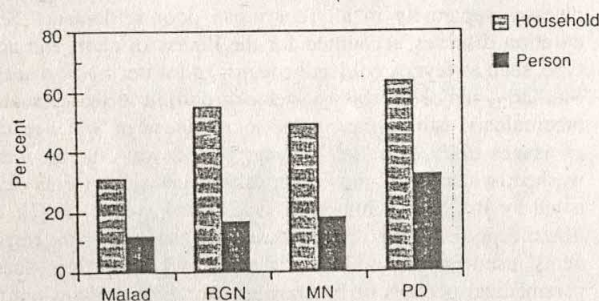


Figure 11: Annual Occurrence of Water-Related Diseases among Urban Poor



cold and cough, unspecified fever, water borne disease were considered under short duration diseases, and nearly 15 diseases including tuberculosis (TB), hypertension, diabetes, heart diseases, cancer, leprosy, and AIDS were assumed under major or chronic diseases.

Based on the result, it is revealed that overall, at any moment about 30 per cent households have at least one person sick, or 4-8 per cent of slum population is suffering from any kind of short duration illness. Similarly, further 20 per cent households have either at least one patient, or 3-6 per cent population, of chronic diseases at any point of time (Table 4).

Among short duration disease, more than one-fourth of sickness is accounted for by water-related diseases (Figure 10).

Regarding chronic diseases, whereas most of the diseases show a higher prevalence rate, tuberculosis and asthma in particular appear the most severe (Table 5). For example, tuberculosis (TB) patients number 7 to 18 per thousand population in urban poor as compared to only 3.3 per thousand in Mumbai as a whole and 4.2 per thousand in India.

Among urban poor, the prevalence rate of all short duration as well as major diseases seems higher among pavement-dwellers than in slums, which could be attributed to greater poverty and harsher living conditions of pavement-dwellers.

Annual prevalence of water-related diseases: Polluted drinking water, insanitary living conditions (lack of sewerage and storm water drainage, improper solid waste disposal and open defecation close to living spaces), poor personal hygiene and food cleanliness, all contribute to water-related diseases. In order to take account of seasonal effects (monsoon or dry weather) on the occurrence of water-related diseases, we attempted to estimate the total morbidity cases of some selected (also common) diseases in a year's period (within last one year back from the time of survey). But the approach again relied on the respondent, who had to give a true account of the previous year's morbidity history.

This anticipated some error on individual respondent's part, which might or might not have been offset in the sum for a community. So, we call this result only estimation which is presented in Table 6. It accounts for the total of incidence, including the account of repeated infection of a disease in the same person.

Almost all diseases show a higher incidence among the urban poor than in the outer world. Pavement-dwellers appear the worst sufferers of all, among whom annual diarrhoeal cases is about 614 per thousand population. It was also understood that 30-60 per cent households and 12-30 per cent individuals get affected by water-related diseases a year (Figure 11). Across a family, children share about two-thirds of all cases.

Statistical Analysis of Data

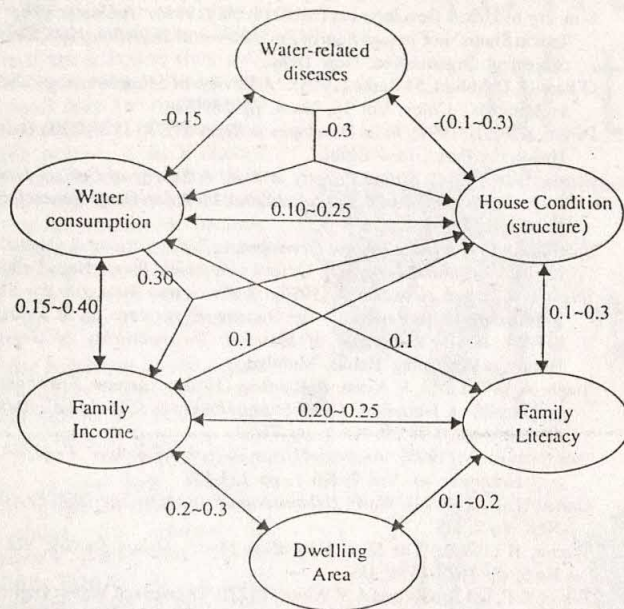
Relationship between socio-economic and environmental conditions: Matrices of Pearson's correlation coefficients and multiple correlation coefficients were determined from the obtained data to identify the possible relationship between socio-economic and environmental conditions in each community. As many variables, both the quantifiable and not easily quantifiable, act upon a state, a strong correlation between only two parameters could not be observed but the data reasonably verified the anticipated positive or negative relationships. The entire result is presented diagrammatically in Figure 12.

Multiple correlation data ascertains the combined impact of two or more variables on the state of affairs in urban poor. For example, as Figure 12 shows, higher water consumption in urban poor is positively correlated with the higher family income and better housing condition but to a lesser degree to the family literacy rate. Similarly, occurrence of water-related disease appears less in the family with higher consumption of water and better housing condition. Apparently less water consumption appears to induce water-washed diseases, but it is only a component of water-related disease. Many more problems are linked to the family income (in other term poverty) and literacy rate, which are again positively correlated to each other.

Intra-urban poor differences: Parametric and non-parametric one-way analysis of variance (ANOVA) tests were performed on several socio-economic and environmental conditions between all four samples (slum and pavement communities) in order to see if the independent samples come from same population or significant disparities exists among them. Since the sample size was sufficiently large, results from both the parametric and non-parametric tests were expectedly similar and equally meaningful. The non-parametric one-way ANOVA has been compared to Kruskal-Wallis test by ranks. But in the case of only two samples, Mann-Whitney U test was performed. All this design and tests were carried out in SYSTAT 9 statistical software.

The socio-economic and environmental indicators tested by ANOVA were housing space per person, water consumption per person, population load per toilet seat, family income and family literacy rate. The null hypothesis assumed has no significant difference in the means of independent samples at 1 per cent significant level. As revealed from results presented in Table 7, the conditions of pavement-dwellers differ significantly from that of the slums. In slums, water consumption and dwelling space is fairly comparable at each place but income and family literacy rates differ significantly. However, the extent of toilet problem

Figure 12: Pearson's Correlation Coefficients (Pair and Multiple) between Socio-Economic and Environmental Parameters



in terms of population load per seat is quite similar to all urban poor i.e., both in slums and pavement-dwellers.

People's Attitude and Priority Issues

Awareness and prioritisation of critical problems: Not only the environment or public utility services but also socio-economic problems such as poverty and employment are acute to urban poor. This could be a reason why urban poor live in slums and as squatters despite lack of basic amenities. Due to different social and educational backgrounds, it is likely that slum resident's view and attitude to their problems could differ considerably from alien researchers. To this end, we identified 10 potential issues pertinent to the urban poor and asked them to rank from 1 to 10 as per severity (i.e. priority to solve) in their family and community. In addition to this ranking, they were also asked to specify the magnitude of each problem on a 4 level scale; extremely severe, moderate, little and no problem. The overall ranking was determined based on weightage of all respondents in each slum. The degree of agreement among respondents within and across slums were measured by Kendall's coefficient of concordance, W , given by:

$$W = \frac{\sum \left(R_j - \frac{\sum R_j}{N} \right)^2}{\frac{1}{12} k^2 (N(N^2 - 1) - k \sum \frac{\sum (t^3 - t)}{12})}$$

where, R_j is the sum of ranks of the entities, N is number of entities ranked (i.e., 10 in this case), k is the number of sets of ranking (i.e., respondents), t is the number of observations in a group tied for a given rank and \sum directs to sum over all groups of ties within any one of the k rankings, and \sum directs to sum the values for all k rankings.

The results are presented in Table 8. As it is observed, toilet, drinking water and housing condition are three topmost priority problems for the urban poor followed by land, sewerage, poverty, unemployment, solid waste disposal, healthcare facilities and social safety respectively. In terms of severity, toilet problem has been expressed as extremely severe while others are moderate to little problem. The Kendall's coefficient of concordance, which ranges from 0.45 to 0.58, reveals a fair degree of agreement between respondents in a settlement. The problem and priorities overall too are alike, depicted by very high value of Kendall's coefficient, 0.87 across all urban poor settlements and 0.92 in case of only 3 slum and squatters considered.

Attitude to resettlement: Considering the difficulties that crowded dwellings pose in delivery of public services and as the land is unhygienic for habitation, respondents were asked if they are willing to rehabilitate by resettling to another place if offered by government. The reaction significantly differed among various groups analysed by chi-square (χ^2) test of homogeneity (Table 9). In general, people who are living in relatively newer squatter settlements and who remain in high risk of eviction by municipality some day were willing to accept the proposal. But others such as in Dharavi have more affection for their present social life and the type of employment, which they fear would be lost otherwise. Environmental problems appear tolerable to them when compared with the degree of social security, their present habitation offered.

Conclusion

This paper presents and discusses facts of life of urban poor of Mumbai in two ways. Firstly, it presents primary data on the present situation of living environment and health condition in four urban poor settlements in Mumbai. It is aimed to demonstrate a collective profile on several categories of urban poor in Mumbai. In this respect, living environment of urban poor could be basically characterised by nearly 70 per cent households living in flimsy shacks and temporary dwellings, 2 m² housing space per person, 28 LPCD water consumption, 1.5 per cent households having access to sewer and only half of the people having access to toilets. Similarly, health status were shown as nearly 11 per cent people sick at any point of time; and TB and asthma patients numbering as many as 18 and 11 per thousand population respectively. The annual cases of water-related disease such as diarrhoea, typhoid and malaria is estimated as 614, 68, 126 cases per thousand of population respectively. Secondly, this study attempts in linking socio-economy and environmental factors to the health consequences of the people. This fact has been substantiated by data that income, literacy, sanitation and personal hygiene (in terms of water consumption rate) have had impact on the morbidity of the people. The impact of poverty and environmental factors has been evidenced by intra-urban-poor gradient seen in four groups of urban poor studied, which is particularly pronounced between slums and pavement-dwellers; the latter has been hit most hard by environmental pollution and lack of basic amenities. The needs of the urban poor and their priorities seem hierarchial. They first needed approval to stay in the place, i.e. securing land and housing and then provision of basic amenities in the order of toilet, water supply, sewer and drainage and so on. Overall, the more the community has gained living stability and socio-economic

prosperity, the higher is the concern on environmental pollution and sanitation related factors. [27]

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Oxfam GB, an international humanitarian, development and campaign organization, works with others in more than 70 countries to find lasting solutions to poverty and suffering. Oxfam GB has worked for over 50 years in India and is registered as Oxfam (India) Trust. Oxfam would like to recruit the following position to be based in Delhi.

Gender Advisor

One of OGB's major objectives is to achieve gender equality. Oxfam works on mainstreaming gender equality in its development and humanitarian programmes and has a special focus on violence against women. Oxfam is launching a South Asia Campaign to End Violence against Women (CEVAW), which will be piloted in India.

The Gender Advisor would be required to coordinate and provide leadership for effective design and delivery of the Campaign in India. Responsibilities would include: launching and sustaining the campaign; representing the campaign externally on behalf of OGB's India team; coordinating research, media work, networking and alliance building; and building capacities of Oxfam staff and staff of Oxfam's partner organisations on gender and VAW issues. Beyond the campaign period, the Advisor would focus on gender mainstreaming across all programme work in India.

At least 8 years of relevant experience and a university degree in a relevant subject is required. The candidate should possess extensive knowledge and understanding of gender issues, especially the VAW issues in India, adequate experience in networking and alliance-building and excellent English writing and communication skills. Ability to undertake fund-raising is desirable.

Applications need to be submitted on the standard Oxfam application forms with a covering note of not more than 2 sides of A4 size paper explaining "Why you think you are the right candidate" for the post you are applying. The forms and job description are available by email at Guestndel@oxfam.org.uk or can be collected personally from the OGB office at the address mentioned below.

Completed application forms should be sent to Oxfam (India) Trust, C-5 Qutab Institutional Area, New Delhi - 100 017 not later than 28th August, 2003

One starlit night in 1994, two friends C N Keshavan and E P Menon, met after a gap of 40 years. From 9 pm to 2 am that day, they gave form to what they believed was their small step for the development and evolution of the nation. However, putting it in a cliched manner, the small step that these two men took, turned out to be a giant leap for humanity, because their dreams soon materialised into the India Development Foundation (IDF), which went on to change the lives of hundreds of people.

Firmly believing in the adage, that 'give a fish to the hungry and you help him for the present, but teach him how to fish, you help him forever', one of IDF's main projects is the Self Reliance Training program that has benefited about 400 women in Bangalore's slums. Says IDF's Executive Trustee M... "In 1960, Bangalore had 200 and today there are more than 400. The common story that most women in these slums share is dependency on a husband who indulges in life-beating, is usually unemployed or spends all that he earns on alcohol." This is where IDF steps in and ensures that the women undergo vocational training and become self-sufficient.

The IDF trains a group of 20 women for two months. Skills are imparted are either in tailoring or screen printing. Menon says that tailoring is more popular because the women take home and use the clothes that they stitch in class. "There is absolutely no restriction on the type of women who join our class, except that they should be from the economically poor strata and in need of training like this. All we ask of them is three hours of their time for two months," he adds.

Training is conducted by two instructors, using two sewing machines. The women learning sewing for five days of the week with the Saturdays being devoted to lectures by professionals from other walks of life. "The Saturday lecture is aimed at making the women socially and politically aware and share with them experiences of professionals like doctors, lawyers, educationists etc.," says Menon. Sometimes, the IDF

Towards the India of their dreams



Forty years ago two friends decided to do something for those less privileged than themselves. They set up the India Development Foundation to empower women in Bangalore's slums

Eetide

also brings in a naturopathy doctor to talk to the women about home remedies for minor ailments.

The IDF realises that keeping the women away from a job or home for 2 months may be a little difficult, so besides a certificate

that will help them get a job, they are given a stipend of Rs 200 per month. About twenty-five percent of the women trained by IDF are working in garment factories and a some of them run their own business.

The training imparted by the

IDF also works wonders for the women emotionally, says Menon. "They follow different religions and belong to different castes but at the end of the training they are one group," he adds. This is the reason why IDF was asked to conduct a course at Chamrajpet which is prone to communal violence.

Over six years the foundation has conducted various training sessions at slums in Peenya, Jayanagar, Chamrajpet, Ulsoor, Wilson Gardens, Basavangudi and Yelahanka which have shown positive results with the condition of women having greatly improved. IDF also has some projects for the youth of India. They also publicly recognise others who have been instruments of reform in our society and honour them with the title of 'Desasnehi'.

Tina Garg

Population expansion

Bharat Jhunjhunwala

NEWSTIME

22 AUG 2003

It is true that most states that have higher population have lower incomes and vice versa. But that does not mean that lesser population is the cause of prosperity. In statistics correlation does not mean that one is the cause of the other. My teacher of statistics used to narrate an interesting story. He said that most people watching cabaret from the front rows were bald. There is a strong correlation between baldness and cabaret-watching. But we cannot conclude from this that cabaret-watching leads to baldness. Both may be related to high levels of testosterone.

Similarly, correlation between low population and high income does not mean that one is the cause of the other. In order to draw any inference we have to apply common sense and see whether one might be the cause of the other. It is possible that both may be linked to a third factor.

Prosperity

The second problem is that a correlation does not indicate the direction of the causality. It may be that baldness leads to cabaret-watching; or it may be that cabaret-watching leads to baldness. Once again, one has to apply common sense to examine the link. There is some evidence that economic prosperity may not be linked to lower population. According to the Economic Survey published by the ministry of finance, Gujarat and Maharashtra had higher than-average rates of population growth as well as income during the nineties. The population of Maharashtra grew by 22.6 per cent and that of Gujarat by 22.5 per cent in this period against the national average of 19.5 per cent. If low population had a decisive influence on growth then these states should have had low growth rates. On the other hand Orissa, Assam and Bihar had lower-than-average rates of population growth as well as income during the same period.

What does the common sense say? If the purpose of life is to increase consumption then man would like to reduce the number of human beings so that he can have more consumption. In this situation higher income would lead to lesser population and

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vice versa. But this equation works only if the purpose of life is higher standard of living. The obsession with standard of living arises from the idea that the purpose of life is to consume as much as possible during this life. If consumption is happiness then less population would be in order. It is possible, however, that people may not place much value on the standard of living. The purpose of life in the Eastern tradition is moksha or nirvana or following Allah's or God's will. None of these requires a high standard of living.

One dare say that the rich are happier persons than the poor. The ascetics are happy though they have frugal standard of living. Buddha did not require an air conditioner to attain nirvana. In fact, material prosperity can be a positive obstruction to nirvana. It is said that an attempt to remove desires by fulfillment is difficult because the desires increase like ghee poured in fire. So nirvana can be attained by reducing the standard of living rather than by increasing it as the Western tradition says.

Man is the highest living being. The Hindus believe in rebirth. It is thought that a large number of souls are wandering in the skies looking for a suitable foetus to enter into. Larger number of children would provide opportunity to larger number of wandering souls to be born as human beings. One would be work-

ing for the welfare of those souls by giving more of them the opportunity to be born as human beings. In such a cultural context, one would use higher income to produce more children, not less. Thus the correlation seen between low population and high income in some states only means that they pursue the standard of living as the goal of life.

The central question is whether we want more number of poorer human beings; or lesser number of richer human beings. The answer depends upon what is thought to be the purpose of life. If the purpose is thought to be material pleasure then lesser number of richer human beings would be in order. But if the purpose is to fulfill God's will then more numbers of poorer human beings would be proper. Of course, this does not mean that mankind must continue to produce children in such large numbers that exceeds the earth's carrying capacity. But such is clearly not the circumstance today.

According to the World Bank the average income of an Indian was \$459 per capita in 2001. The world income in that year was \$31,500 billion. This means that the present world income is sufficient to sustain 68 billion human beings at the standard of living of an Indian. On the other hand the income of United States is \$34,862 per capita. At this level the world income can sustain

only 900 million persons. The choice before us then is whether we want 68 billion Indians or 900 million Americans. The present world population is about 6 billion persons. Whether we seek an increase or decrease in this would depend upon what is the purpose of life. The idea that one does a great service to the environment by producing fewer children then stands on its head. Mother earth does not need air conditioners and cars. She can do well with trees which also give fruits and a walking stick which is biodegradable. So the argument for reducing population is not love of nature or environment.

The real argument is that we want more consumption ourselves and want to deny it to others-born and unborn-their share. This utter selfishness of wanting to consume everything oneself is passed off as social responsibility, love of nature, environment sustainability, etc.

Consumption

There is no gainsaying that these objectives could just as well be served by reducing the level of consumption while increasing the number of human beings. We should not get carried away by the relation that is observed between population and economic growth. We should take note that high income has led to more sex-selected abortions in the states of Haryana and Punjab. It is culture that matters. If culturally people want more male children than higher income leads them to more sex-selected abortions. If they wanted gender equality then they would have not done so and instead reduced the number of children. Higher education did not lead to less discrimination. It has led to more discrimination because the purpose of life is different. The question that we must discuss is how many human beings the earth can sustain at various standards of living. Then we must decide whether mankind's purpose would be fulfilled by producing 68 billion Indians or 900 million Americans. This does not mean that we should glorify poverty. But we can certainly orient economic growth so that more human beings can be happily sustained instead of getting higher standard of living to a few.

We have to make a conscious choice between high living standards and high population rate, says Bbarat Jhunjhunwala

Population expansion?



It is true that most states that have higher population have lower incomes and vice versa. But that does not mean that lesser population is the cause of prosperity. In statistics, correlation does not mean one is the cause of the other. My statistics teacher used to narrate an interesting story. He said most people watching cabaret from the front rows were bald. There is a strong correlation between baldness and cabaret-watching. But we cannot conclude from this that cabaret-watching leads to baldness. Both may be related to high levels of testosterone.

Similarly, correlation between low population and high income does not mean that one is the cause of the other. In order to draw any inference we have to apply common sense and see whether one might be the cause of the other. It is possible that both may be linked to a third factor. The second problem is that correlation does not indicate the direction of the causality. It may be that baldness leads to cabaret-watching; or it may be that cabaret-watching leads to baldness. Once again, one has to apply common sense to examine the link.

There is some evidence that economic prosperity may not be linked to lower population. According to the Economic Survey published by the Ministry of Finance, Gujarat and Maharashtra had higher-than-average rates of population growth as well as income during 1990s. The population of Maharashtra grew by 22.6 per cent and that of Gujarat by 22.5 per cent in this period against the national average of 19.5 per cent. If low population had a decisive influence on growth then these states should have had low growth rates. On the other hand Orissa, Assam and UP had lower-than-average rates of population growth as well as income during the same period.

What does commonsense say? If the purpose of life is to increase consumption then man would like to reduce the number of human beings so that he can have more consumption. In this situation higher income would lead to lesser population and vice versa. But this equation works only if the purpose of life is higher standard of living. The obsession with standard of living arises from the idea that the purpose of life is to consume as much as possible



during this life. If consumption is happiness then less population would be in order.

It is possible, however, that people may not place much value on the standard of living. The purpose of life in the Eastern tradition is *moksha* or *nirvana* or following Allah's or God's will. None of these requires a high standard of living. One daresay that the poor are happier than the rich. Ascetics are happy though

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ty to larger number of wandering souls to be born as human beings. One would be working for the welfare of those souls by giving more of them the opportunity to be born as human beings. In such a cultural context, one would use higher income to produce more children, not less. Thus the correlation seen between low population and high income in some states only means that they pursue the standard of living as the goal of life.

The central question is whether we want more numbers of poorer human beings or lesser number of richer human beings. The answer depends upon what is thought to be the purpose of life. If the purpose is thought to be material pleasure then lesser number of richer human beings would be in order. But if the purpose is to fulfill God's will then more number of poorer human beings would be proper. Of course, this does not mean that mankind must continue to produce children in such large numbers that exceeds the earth's carrying capacity. Such is clearly not the circumstance to-

day. According to the World Bank, the average income of an Indian was \$459 per capita in 2001. The world income in that year was \$31,500 billion. This means the present world income is sufficient to sustain 68 billion human beings at the standard of living of an Indian. On the other hand, the income of United States is \$34,862 per capita. At this level the world income can sustain only 900 million persons. The choice before us then is whether we want 68 billion Indians or 900 million Americans. The present world population is about six billion persons. Whether we seek an increase or decrease in it would depend upon what is the purpose of life.

The idea that one does a great service to the environment by producing fewer children then stands on its head. Mother earth does not need air conditioners and cars. She can do well with trees which also give fruits and a walking stick, which is biodegradable. So the argument for reducing population is not love of nature or environment. The real argument is that we want more consumption ourselves and want to deny it to others, born and unborn, their share. This utter selfishness of wanting to consume everything oneself is passed off as social responsibility, love of nature, environment sustainability, etc. There is no gainsaying that these objectives could just as well be served by reducing the level of consumption while increasing the number of human beings.

We should not get carried away by the correlation that is observed between population and economic growth. We should take note that high income has led to more sex-selected abortions in Haryana and Punjab. It is culture that matters. If culturally people want more male children then higher income leads them to more sex-selected abortions. If they wanted gender equality then they would have not done so and instead reduced the number of children. Higher education did not lead to less discrimination. It has led to more discrimination because the purpose of life is different.

The question we must discuss is how many human beings the earth can sustain at various standards of living. Then we must decide whether mankind's purpose would be fulfilled by producing 68 billion Indians or 900 billion Americans. This does not mean we should glorify poverty. But we can certainly orient economic growth so that more human beings can be happily sustained instead of getting higher standard of living to a few.

Religion, Population Growth, Fertility and Family Planning Practice in India

The differential growth rates of Hindu and Muslim populations in India, as well as differences in acceptance of family planning practices, have always formed the subject of controversial debate. Based primarily on five national level surveys conducted between 1970 and 1998, this paper makes an attempt to analyse the differential growth rates of the Hindus and Muslims in India, their fertility levels and family planning practices observed by them.

P H REDDY

I Introduction

A controversy has been raging over differential growth rates of the Hindu and Muslim population in India, their fertility differentials and the differentials in their family planning acceptance. The controversy has become poignant not only because of academic interest, but also because of political interest.

According to an estimate for 1891-1931, the fertility of the Muslims was about 15 per cent higher than that of the Hindus in undivided India [Visaria 1974: 365]. Analysing data obtained by various sample surveys, Visaria (1974: 372) has concluded that "... there are differentials in marital fertility between the Hindus and Muslims (in post-independence India)". Ramakumar (1975: 276-88) was more interested in studying the differences in the religious composition of the states in 1951, 1961 and 1971, changes that have taken place in the religious composition of the states following reorganisation of states, and whether states with similar religious composition can form regions. The analysis has some political implications because the partition of British India was made on the basis of religious composition of the districts.

Analysing the role of proximate variables in the Hindu-Muslim differentials in fertility and population growth, Balasubramanian (1984: 189-215) has concluded that the growth of the Muslim population is higher than that of the Hindu population primarily because the fertility of the Muslims is 'statistically' and 'substantively' higher than that of the Hindus.

Reviewing the socio-economic and demographic data according to religion available from various sources, it is concluded that the differences in fertility and family planning acceptance of the Hindus and the Muslims are marginal [Shariff 1995: 2947-53].

A study of the growth of the Hindu and the Muslim populations during the decade 1981-91 has concluded that the higher growth rate of the Muslims in the large states as well as in India as a whole is attributable primarily to their higher levels of fertility as compared to the Hindus, to some extent to their lower level of mortality and to a small extent to migration of Muslims from across the border [Kulkarni 1996].

Even in a highly literate state like Kerala, fertility of the Muslims is higher than that of the Hindus. One study has found that in Kerala, "... the tendency to go for the third and

higher order births has considerably declined through the 1970s and 1980s in the state. But the decline has not been uniform at least across the three major religions in the state - Hindu, Muslim and Christian, in particular, the fall among the Muslims has been relatively modest" [Alagarajan and Kulkarni 1998:224].

Analysing the national level data, Moulasha and Rama Rao (1999: 3047-51) have convincingly demonstrated that the fertility of the Muslims is higher than that of the Hindus in India. Finding fault with the analysis of Moulasha and Rama Rao, Jeffery and Jeffery (2000: 3253-59) have argued, largely on the basis of their study in a tiny place called Bijnor in north India, that analysis of national level data could be misleading and that the findings of micro-level studies should be utilised. In this context, the observation by Kulkarni (2001) that governments cannot formulate separate population policies for each religious group or for a tiny place like Bijnor is pertinent. Surely, a religious group or a small place cannot be a unit or level of governance. Had the Jefferys studied the data generated by the three all-India family planning surveys conducted by the Operations Research Group, Baroda (for details see below), they would have changed the line of their argument.

In the present article, an attempt is made to analyse, as dispassionately as possible, the differential growth rates of the Hindus and Muslims in India, their fertility levels and family planning practice by them. Before proceeding to analyse the data, a brief description of the major sources of data is in order.

Since the problem of growth of the Hindu and Muslim populations, their fertility and practice of family planning by them is so complex and controversial, it requires painstaking analysis of several documents to ferret out the essential facts. But mention must be made of five documents, although some other documents have also been used.

The five documents include the following. In September 1969, the ministry of health and family planning, government of India, commissioned a survey of knowledge, attitudes and family planning practice in India by the Operations Research Group (ORG), Baroda. The field work for this survey commenced in July 1970 and was completed by January 1971. Totally, 25,330 currently married individuals were interviewed. Of them, 12,716 were husbands and 12,614 were wives. These respondents were drawn from 254 urban and 704 rural settlements spread all over the country [ORG 1971]. This we call ORG-1.

In 1979, the ministry of health and family welfare (MOHFW) again hired the ORG to conduct an all-India survey of family planning practices. The field work of the second survey started in 1980 and was completed in early 1981. In all, 41,052 households were contacted and 34,831 couples with wives in the reproductive age were interviewed. The couples were selected from 805 villages and 238 towns, spread all over the country [ORG 1983]. The objectives of the second survey were more or less the same as those of the first survey conducted in 1970. Thus, the results are comparable. This we call ORG-2.

In 1988, the MOHFW hired the ORG for the third time to conduct third all-India survey of family planning practices. The field work for this survey was conducted between July 1988 and February 1989. The survey collected data from a sample of 44,918 eligible couples residing in 1,271 villages and 205 towns spread all over India [ORG 1990]. The objectives of the third survey were also more or less the same as those of the first and second surveys conducted in 1970 and 1980, respectively. Thus, we have data on knowledge, attitudes and practice of family planning at three points in time, that is, 1970, 1980 and 1988. The third survey is called ORG-3.

The first National Family Health Survey (NFHS-1) was launched by the MOHFW. The International Institute for Population Sciences (IIPS), Bombay (now Mumbai) was designated by the MOHFW as the nodal agency for providing coordination and technical guidance to the NFHS-1. The survey was carried out by various consulting organisations (COs) in collaboration with the concerned population research centres in each state. The East-West Centre/Macro International provided technical assistance for all the survey operations. The United States Agency for International Development (USAID), New Delhi, provided funding for the NFHS-1. The NFHS-1 covered 24 states and the National Capital Territory of Delhi (now Delhi state), which comprise 99 per cent of the total population of India. Totally, the NFHS-1 covered 89,777 ever-married women age 13-49 and 88,562 households [IIPS 1995]. The data collection started in April 1992 and was completed in September 1993.

The MOHFW also launched the second National Family Health Survey (NFHS-2). The NFHS-2, undertaken in 1998-99, was funded by the USAID through ORC Macro, USA. The UNICEF provided additional funding for the nutritional components of the survey. The IIPS was designated as the nodal agency for the NFHS-2 by the MOHFW. Thirteen reputed field organisations (FOs) in India, including five PRCs, carried out the houselisting operation and data collection. ORC Macro, USA and the East-West Centre, USA, provided technical assistance for all survey operations. The NFHS-2 covered a sample of more than 90,000 eligible women age 15-49 from 26 states that comprise more than 99 per cent of India's total population. The data were collected in two phases, starting in 1998 and March 1999 [IIPS 2000].

"The principal objective of NFHS-1 and NFHS-2 is to provide scientifically compiled, statistically valid and internationally comparable estimates of fertility, family planning practice, infant and child mortality, maternal and child health, utilisation of health services provided to mothers and children and growth and development of children below five years of age by measuring their height and weight" [Srinivasan 2001: 4]. Thus, data collected by the NFHS-1 and NFHS-2 are eminently suited for purposes of our analysis.

The foregoing five documents form the main sources of our data. Thus, we have data on fertility and family planning

practice at five points in time, that is, 1970 (ORG-1), 1980 (ORG-2), 1988 (ORG-3), 1992-93 (NFHS-1) and 1998-99 (NFHS-2).

II Population Growth Differentials

It has often been said that the first population census in India was conducted in 1871. But the truth of the matter is that the first census was not synchronous; rather, it had been conducted between 1867 and 1872. Some chose to treat it as if it represented 1871, "Since the growth rate during these years was very slight, the error is small no matter which date is adopted as the date of the census" [Davis 1951: 27]. India's population, according to the first census, was 203.4 million. However, we will consider here the population recorded from the 1881 census on because it is said

Table 1: Growth of Hindu and Muslim Population in India, 1881-91

Year	Population (in Millions)		Percentage to Total Population		Decadal Growth Rate (Per Cent)	
	Hindu	Muslim	Hindu	Muslim	Hindu	Muslim
Undivided India ¹						
1881	187.8	49.9	75.1	20.0	-	-
1891	207.6	57.1	74.2	20.4	10.5	14.4
1901	206.9	62.1	72.9	21.9	-0.3	8.8
1911	217.2	67.8	71.7	22.4	5.0	9.2
1921	216.2	71.0	70.7	23.2	-0.4	4.7
1931	238.6	79.3	70.7	23.5	10.3	11.7
1941	270.2	94.4	69.4	24.3	13.2	19.0
India ²						
1951	303.6	35.4	84.9	9.9	-	-
1961	366.5	46.9	83.4	10.7	20.7	32.5
1971	453.4	61.4	82.7	11.2	23.7	30.9
1981	549.7	75.7	82.6	11.4	24.4	30.9
1991	687.6*	101.6*	82.0	12.1	22.8**	32.8**

Source: 1 Davis (1951).

2 Various census reports of India.

* Excludes figures of Jammu and Kashmir.

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Table 2: Mean Ideal Number of Children for Ever-Married Women Age 15-49, India 1992-93 and 1998-99

Year	Religion	Mean Ideal Number of Children
1992-93	Hindu	2.8
	Muslim	3.3
1998-99	Hindu	2.6
	Muslim	3.1

Source: NFHS-1 and NFHS-2.

Table 3: Neonatal, Postneonatal, Infant, Child and Under-Five Mortality for 10-Year Period Preceding the Survey, India (1992-93 and 1998-99)

Year	Religion	Neonatal Mortality	Postneonatal Mortality	Infant Mortality (1q0)	Child Mortality (4q1)	Under-Five Mortality (5q0)
1992-93	Hindu	55.0	35.4	90.4	36.9	124.0
	Muslim	47.1	29.6	76.6	32.2	106.3
1998-99	Hindu	50.4	26.7	77.1	32.4	107.0
	Muslim	38.0	20.8	58.8	25.4	82.7

Source: NFHS-1 and NFHS-2.

that the population was severely underenumerated in the first census.

Table 1 presents data on the size of Hindu and Muslim populations, their percentage to total population and their decadal growth rates from 1881 to 1991. A number of important observations can be made on this table. In 1941, out of a total population of 389 million in undivided India, Hindus accounted for 69.4 per cent and Muslims for 24.3 per cent. Since these proportions changed slowly, they effectively described the situation on the eve of partition.

What strikes the eye most in Table 1 is that the percentage of Muslims in the total population of undivided India and the union of India showed an increase at every census, while that of Hindus showed a decline. It may be noted that the Muslim population in undivided India increased from a little less than 50 million in 1881 to 94.4 million in 1941. In terms of proportion, it increased from 20 per cent in 1881 to 24.3 per cent in 1941. The Hindu population in undivided India increased from 187.8 million in 1881 to 270.2 million in 1941. But, in terms of proportion, it decreased from 75.1 per cent in 1881 to 69.4 per cent in 1941. Even in the union of India, the Muslim population increased from 35.4 million in 1951 to 101.6 million in 1991; in terms of proportion, it increased from 9.9 per cent in 1951 and 12.1 per cent in 1991. In the union of India, the Hindu population increased from 303.6 million in 1951 to 687.6 million in 1991. But during 1951-91, as during 1881-1941, the proportion of Hindus in the total population declined, from 84.9 per cent to 82.0 per cent.

During 1891-1901 and 1911-21, India was swept by influenza and bubonic plague. As a result, there were more deaths than births in the country during these two decades. As can be seen from Table 1, the Hindu population decreased from 207.6 million in 1891 to 206.9 million in 1901 and from 217.2 million in 1911 to 216.2 million in 1921. The Hindu population registered negative growth rate during both the decades: -0.3 per cent during 1891-1901 and -0.4 per cent during 1911-21. But the Muslim population increased from 57.1 million in 1891 to 62.1 million in 1901 and from 67.8 million in 1911 to 71.0 million in 1921. The growth rates were positive during both the decades: 8.8 per cent during 1891-1901 and 4.7 per cent during 1911-21. Thus, Muslims were less affected than Hindus when the country was swept by influenza and bubonic plague.

It is observed that "The decadal growth rate during 1971-81 was substantially lower than that of the previous decade, for the total population as a whole. This means the growth rates of its components, such as by various religions would also be lower compared with respective rates during 1961-71" [Shariff 1995: 2948]. The observation is not correct. The growth rate of the total population of India during 1971-81 was 24.99 per cent, up from 24.80 per cent during 1961-71 [Bhatia 1990: 127]. Similarly, the growth rate of the Hindus during 1971-81 was 24.42 per cent, up from 23.71 per cent during 1961-71, and that of the Muslims increased from 30.85 per cent during 1961-71 to 30.90 per cent during 1971-81 [Bhatia 1990: 127]. But the growth rates of the Christians and the Sikhs showed substantial decline during 1971-81 compared to 1961-71.

It is said that the proportions of Hindus in the Indian population showed a decline at successive censuses because they were underenumerated [Shahabuddin 1990: 54]. There are, of course, undercounts in the Indian censuses, but these are not peculiar to the Indian censuses. The censuses of even industrially advanced countries miss to count a few per cent of their populations. But no deliberate attempt is made in India to undercount population and much less to undercount the population of a particular

community. It is impossible to identify the communities which are counted less completely than others by the Indian censuses because the results of the post-enumeration checks do not provide other details than age, sex, and broad regional and rural-urban distribution of the population missed in the Indian censuses. Therefore, the assertion that there is 'selective underenumeration' in the Indian censuses has no basis. If people belonging to any religion are undercounted, it should be Muslims because Muslim women practice purdah system and are secluded and are, therefore, not easily accessible to census enumerators.

As can be seen from Table 1, the growth of the Muslim population during 1981-91 is 32.8 per cent, the highest recorded for any intercensal decade, and that of the Hindu population is

Table 4: Neonatal, Postneonatal, Infant, Child and Under-Five Mortality Rates for the 10-Year Period Preceding the Survey in Urban and Rural Areas, India, 1998-99

Religion	Neonatal Mortality	Postneonatal Mortality	Infant Mortality (1q0)	Child Mortality (4q1)	Under-Five Mortality (5q0)
			Urban		
Hindu	36.6	16.7	53.3	17.2	69.6
Muslim	25.9	14.0	39.8	18.8	57.9
			Rural		
Hindu	53.8	29.1	82.8	36.3	116.2
Muslim	43.6	23.8	67.5	28.6	94.1

Source: NFHS-2.

Table 5: Which Is a Large Family, 1980 and 1988

Year	Religion	Upto Two	Three	Four	Five	Six	Seven Or More	Do Not Know	Mean
1980	Hindu	0.3	10.8	31.6	29.3	15.6	10.1	2.3	4.8
	Muslim	0.1	4.9	22.5	26.7	17.6	18.3	3.4	5.2
1988	Hindu	1.2	16.9	30.5	25.0	14.7	11.5	0.2	4.7
	Muslim	0.7	9.7	22.2	24.0	18.4	24.2	0.7	5.2

Source: ORG-2 and ORG-3.

Table 6: Ideal Family Size, 1988

Religion	An ideal Family Size Consists of				Mean
	One Child	Two Children	Three Children	Four or More Children	
Hindu	0.8	33.4	42.9	22.3	3.0
Muslim	0.3	20.7	36.9	42.1	3.5

Source: ORG-3.

Table 7: Total Fertility Rate for the Three Years Preceding the Survey and Mean Number of Children Ever Born to Women Age 40-49, India (1992-93 and 1998-99)

Year	Religion	Total Fertility Rate ¹	Mean Number of Children Ever Born to Women Age 40-49 ²
1992-93	Hindu	3.30	4.78
	Muslim	4.41	5.23
1998-99	Hindu	2.78	4.34
	Muslim	3.59	5.72

Note: 1 Rate for women age 15-49 years.

2 For this calculation, it is assumed that women who are never married, widowed, divorced, separated, or deserted are not currently pregnant.

Source: NFHS-1 and NFHS-2.

22.8 per cent. There are no signs of decline in the decadal growth rate of the Muslims. It may be remembered that population growth is a product of fertility, mortality and migration. Let there be no mistake that the higher growth rate of Muslims is mainly due to their higher fertility. Analysing the Hindu and Muslim population growth rates, Balasubramanian (1984: 210) concluded. "The higher growth rate of the Muslim population that has been observed consistently in all the censuses of India is primarily due to higher level of fertility of Muslims as compared to that of Hindus". Estimating the contributions of fertility, mortality and migration to the Hindu-Muslim growth differentials during 1981-91, Kulkarni (1996: 23) concluded: "The analysis of the population growth during 1981-91 indicates that the higher growth among Muslims as compared to Hindus is primarily attributable to the higher fertility of Muslims".

The contrasting trends in the growth of the Hindu and Muslim populations in India have triggered the belief that, sooner or later, Muslims would outnumber Hindus. The belief had been there even in undivided India. Some analysts have estimated the number of years required for the Muslim population to exceed the Hindu population. Is it really possible for Muslims to outnumber Hindus? A world renowned American demographer and sociologist has said, "This was possible but not probable. The rate of gain has been so gradual that if the two religious groups had continued the same rates of growth that they averaged between 1891 and 1941, 263 years had been required after 1941 for the Muslim population to equal that of the Hindus" [Davis 1951: 193]. A diplomat-turned-politician said in typical diplomatic language, "Even if the annual rate of growth of the population of one or the other of the minority communities is a few points ahead of the average for the majority, it will be many, many decades before any significant change is effected in the overwhelming majority status of the majority community" [Aiyar 1990: 34]. Even if the 1981-91 growth rates of the Hindu and Muslim populations continue, "... it would take about 250 years for the Muslim population to catch up with the Hindu population numerically" [Kulkarni 1996: 24]. Many decades or 250 years is not too long a period in the life of a country. Moreover, the growth differentials have continued for 120 years, from 1881 to 1991. But the important question is whether they will continue for another 250 years.

III Fertility Differentials

Before proceeding to analyse the data on fertility differentials, a brief discussion on three issues related to fertility is in order. It is well-known that a Muslim man in India is permitted to marry, both legally and religiously, up to four wives. The issue here is not whether polygyny will result in higher fertility or not; rather, the issue is whether it is possible or not for some Muslim men to have more than one wife. Some educated laymen point to the sex ratio in the total population, which is unfavourable to females, and argue that even if a Muslim man wants to marry more than one wife, he cannot because there is a shortage of women.

Engineer (1992) has said that "Among the Muslims there are 925 women for every thousand men. The number of women being less than that of men, how can every man, even if he so desired, have more than one wife". Engineer exaggerates the issue by saying how can every Muslim man have more than one wife. Nobody said that every Muslim man has more than one wife.

Table 8: Total Fertility Rate for the Three Years Preceding Survey and Percentage of All Women Age 40-49 Currently Pregnant by State, 1998-99

State	Total Fertility Rate ¹		Percentage Currently Pregnant ²	
	Hindu	Muslim	Hindu	Muslim
Bihar	3.36	4.44	6.5	8.0
Gujarat	2.70	3.12	4.5	5.0
Haryana	2.77	5.98	5.0	9.0
Jharkhand	2.58	4.49	4.9	7.5
Karnataka	2.04	2.84	5.0	6.2
Kerala	1.64	2.46	3.3	5.1
Madhya Pradesh	3.35	3.39	6.9	7.7
Maharashtra	2.45	3.30	5.7	8.6
Orissa	2.45	3.01	5.1	3.3
Punjab	2.29	3.31	4.4	6.9
Rajasthan	3.69	4.93	8.0	7.9
Tamil Nadu	2.16	2.57	5.4	4.7
Uttar Pradesh	3.87	4.76	6.5	8.3
West Bengal	2.02	3.29	3.9	6.0

Note: 1 Rate for women age 15-49 years.

2 For this calculation, it is assumed that women who are never married, widowed, divorced, separated, or deserted are not currently pregnant.

Source: NFHS-2 State Reports.

Table 9: Average Number of Live Births Per Currently Married Woman Age 15-44 by Education (of Wives), 1988

Education of Wives	Hindu	Muslim
Illiterate	3.37	3.72
Gone to primary school	3.16	3.57
Gone to secondary school or above	2.33	2.71
All	3.09	3.51

Source: ORG-3.

Table 10: Average Number of Live Births Per Currently Married Woman Age 15-44 by Income Levels, 1988

Monthly Family Income	Hindu	Muslim
Upto Rs. 500	3.20	3.47
Rs 501-750	3.28	3.74
Rs 751-1,000	3.07	3.56
Rs 1,001-1,500	3.03	3.53
Rs 1,501+	2.65	3.21
All	3.09	3.51

Source: ORG-3.

Table 11: Who Declares about Family Size, 1980²

Religion	Husband	Wife	Both	Elder Members	Do Not Know
Hindu	51.1	2.1	35.7	9.0	2.1
Muslim	55.1	2.0	28.1	9.5	5.3

Source: ORG-2.

Table 12: Inter-Spouse Communication on Family Planning, 1970, 1980 and 1988

Year	Religion	Exists
1970	Hindu	19.2
	Muslim	14.2
1980	Hindu	35.5
	Muslim	24.9
1988	Hindu	52.0
	Muslim	45.0

Source: ORG-1, ORG-2 and ORG-3.

It is not that every man can marry every woman in the entire population ranging from infants to the elderly. There are marriageable age groups among men and women. It is essential to remember that brides are five to seven years younger than grooms. In a rapidly growing population, younger age groups are larger than older age groups. This means that the number of marriageable women exceeds that of marriageable men. This is what is called marriage squeeze. In fact, this is one of the important reasons for the continuance of the dowry problem. According to the 1991 census, the number of women in the age group 15-19 years was 30.15 millions and that of men in the age group 20-24 years was 28.96 millions. Added to the surplus of marriageable women over the marriageable men is the practice of remarriage of widows and divorcees among the Muslims. This further adds to the surplus of women available for marriage (or remarriage). Thus, if some Muslim men desire to have more than one wife, quite a number of them can have.

It is understandable if an educated layman cannot understand the issue and makes the mistake. A few demographers have also made the mistake. For example, Bhatia (1990: 123) also has said that the sex ratio was unfavourable to women among the Muslims and the Hindus and that, therefore, Muslim and Hindu men cannot have more than one wife.

When anybody raises the issues of polygyny among the Muslims, some commentators feel unnecessarily sensitive and offended, and advance a counter-argument citing the outdated statistics on the incidence of polygyny among the Hindus. For example, Mistry (1993a: 17) has stated that the percentages of polygynous marriages were about the same among the Hindus and the Muslims during 1931-41, 1941-51 and 1951-61. It may be noted that these decades were much before and immediately after the law prohibiting polygynous marriages among the Hindus was enacted in 1955. We should be concerned with the present rather than with the past. While no Hindu man can have more than one wife, Muslim Personal Law continues to allow a Muslim man to marry up to four women. If a survey is to be conducted now on the incidence of polygynous marriages among the Hindus and the Muslims, the findings would be revealing.

Moreover, the concept of polygynous marriage is somewhat misleading because if a man's marriage to two women is a polygynous marriage, another man's marriage to four women is also a polygynous marriage. Therefore, when a survey of

polygynous marriages is conducted in future, data should be tabulated by the proportion of men having two, three and four wives.

Some have commented on Hindu-Muslim fertility without knowing the meaning of terms and concepts employed by them in their comment. The objective, it seems, is to some how put down the argument that Muslim fertility is higher than Hindu fertility. For example, Engineer (1992) has discussed at length polygyny, sex ratio, fertility, etc, among the Hindus and the Muslims without knowing the meaning of some of the terms. A demographer has commented that "... his (Engineer's) interpretations regarding the sex ratio, polygyny, fertility and growth rate of Hindus and Muslims are not correct and reflect his lack of understanding of various demographic terms and concepts" [Mistry 1993a: 17].

There are two groups of Muslims with differing views on the number of children a couple should have. One group holds the view that a small family is token of affluence [Mahmood, 1977: 25]. The other group holds the view that a couple should have as many children as possible so that the number of the Prophet's people exceeds that of others [Mahmood 1977: 118].

Now let us turn to what the data say. Table 2 presents the mean ideal number of children for ever-married Hindu and Muslim women age 15-49. The gap in the average ideal number of children for Hindu and Muslim ever-married women is 0.5 according to both the NFHS-1 and NFHS-2. Some commentators might be tempted to say that the reduction in the mean ideal number of children between NFHS-1 and NFHS-2 is the same for both the Hindu and Muslim women. More important is that there is no sign of narrowing down the gap between the mean ideal number of children for both the groups of women.

Table 3 presents differentials in neonatal, post-neonatal, infant, child and under-five mortality rates for 10-year period preceding the surveys. It is immediately clear that all the infant and child mortality rates are much higher for Hindus than for Muslims. In spite of the fact that infant and child mortality rates are lower for Muslims, as we will see, contraceptive prevalence rates are lower and fertility rates higher for them. The cardinal rule is that as infant and child mortality rates decline, fertility rate also declines. But this is not true in the case of Muslims.

Table 4 shows differentials in infant and child mortality rates for Hindus and Muslims in urban and rural areas. The immediate comment that can be made on this table is that, in both urban and rural areas, all the infant and child mortality rates are quite higher for Hindus than for Muslims. Another comment that can be made is that the infant and child mortality rates for both Hindus and Muslims are higher in rural than in urban areas. Children in rural areas experience a 70 per cent higher probability of dying before completing five years of age than urban children.

Table 13: Changes in Inter-Spouse Communication, 1970-80, 1980-88 and 1970-88

Religion	1970-80	1980-88	1970-88
Hindu	16.3	16.5	32.8
Muslim	10.7	20.1	30.8

Source: Computed from Table 12.

Table 14: Percentage of Currently Married Women Who Want No More Children by Number of Living Children, India, 1992-93 and 1998-99

Year	Religion	Number of Living Children							Total
		0	1	2	3	4	5	6+	
1992-93	Hindu	2.8	14.7	60.9	78.3	84.2	85.6	83.2	57.2
	Muslim	2.3	9.5	38.6	60.1	70.5	76.6	77.8	49.2
1998-99	Hindu	2.1	19.1	73.8	85.2	87.9*	-	-	64.4
	Muslim	2.3	10.0	51.3	72.8	80.0*	-	-	56.5

Note: *Those with 4+ Children.

Source: NFHS-1 and NFHS-2.

Table 5 presents data on the opinions about a large family. It can be seen from this table that a greater percentage of Hindus than that of Muslims regarded three, four and five children constituted a large family. The table further shows that, on an average, the family size regarded as large is larger for Muslims than for Hindus in both 1980 and 1988. What is even more interesting is that, over time, there is a slight decline in the perceived mean size of large family among Hindus, while there is no decline among Muslims.

Table 6 turns to consider the opinions about an ideal family size. The table shows that a greater percentage of Hindus than that of Muslims regarded two or three children constituted an ideal family size, whereas a greater percentage of Muslims regarded four or more children constituted an ideal family size. The table further shows that, on an average, the family size regarded as ideal family size is larger (3.5) for Muslims than for Hindus (3.0).

Table 7 shows the differences in the total fertility rate (TFR) and the mean number of children ever born to women age 40-49 by religion. In the NFHS-1, the TFR is substantially higher (1.1 children) for Muslims than for Hindus. However, in the NFHS-2, the TFR is 0.81 child higher for Muslims than for Hindus. This is the kind of trend one wishes to see. The gap between Hindu and Muslim fertility should close down as early as possible.

Table 7 further shows the mean number of children ever born to ever-married Hindu and Muslim women age 40-49 at the time of the survey. According to the NFHS-1, the average number of children ever born is 4.78 for the Hindu women and 5.83 for the Muslim women. The difference is 1.05 children. According to the NFHS-2, the figure is 4.34 for the Hindu women and 5.72 for the Muslim women. The difference is 1.38 children, which is substantial. This is somewhat inconsistent, that is, while there is decline in the difference in the Hindu and Muslim TFR between the NFHS-1 and NFHS-2, there is an increase in the difference in the mean number of children ever born to the two groups of women. "Exceptions can occur because the mean number of children ever born at age 40-49 reflects fertility in the past, whereas the TFR only reflects fertility in the three years preceding the survey" [IIPS 2000: 92].

Table 8 turns to consider the total fertility rate for the three years preceding the NFHS-2 and percentage of all women age 40-49 currently pregnant by state. At the time of writing, reports of the 14 states mentioned in Table 8 had been sent to me by the IIPS. There is no selection of states. It is immediately clear that in all the states, without exception, TFR is higher for the Muslims than for the Hindus. The difference in the TFR ranges from 0.04 child in Madhya Pradesh to 3.21 children in Haryana. In Haryana, the TFR of the Muslims is more than double that of the Hindus. The difference in the TFR of the Hindus and the Muslims in states like Jharkhand and West Bengal is also significant.

As can be seen from Table 8, the percentage of all women aged 40-49 currently pregnant is higher among the Muslims than among the Hindus in all the states, with the exception of Orissa, Rajasthan and Tamil Nadu. In Rajasthan, the percentages are virtually the same. The difference in the percentage of women currently pregnant is substantial in some states like Haryana, Jharkhand, Maharashtra and West Bengal.

Table 9 shows the average number of live births per currently married woman age 15-44 by education of wife. Referring to my

analysis [Reddy 1993] of statistics presented in Table 9, Mistry (1993a) has said, "... although at each educational level, Muslims exhibited higher fertility than Hindus, with increasing educational level of the wife, the fertility declined among Muslims

Table 15: Practice of Various Family Planning Methods, 1970

Method	Per Cent of Couples Who Have Ever Practised		
	User	Hindu	Muslim
Women-oriented:			
Tubectomy/IUD/Oral	Current User	3.7	3.5
Pills/Diaphragm/Jelly/ Foam tablets	Ever User	4.7	4.6
Men-oriented:			
Vasectomy/condom	Current User	5.7	3.2
	Ever User	7.2	4.2
Abstinence/withdrawal	Current User	4.1	2.4
	Ever User	6.8	4.7
Any Method	Current User	13.8	8.8
	Ever Use	18.5	12.7

Source: ORG-1.

Table 16: Practice of Family Planning among Religious Groups by Level of Education, 1970

Educational Level of Wife	Per Cent Ever - Practiced	
	Hindus	Muslims
Illiterate	13.7	9.9
Gone to primary school	31.0	13.3
Gone to secondary school or college	46.3	37.2

Source: ORG-1.

Table 17: Per cent of Couples Currently Using Any Family Planning Method, 1988

State	Hindu*	Muslim	SC/ST
Haryana	53.8	23.8	48.2
Delhi	69.6	53.8	65.3
Himachal Pradesh	54.2	16.0	52.4
Jammu and Kashmir	48.5	35.0	38.0
Punjab	72.4	28.3	68.1
Chandigarh	70.2	35.8	52.3
Rajasthan	30.9	17.3	19.1
Uttar Pradesh	29.4	18.1	24.1
Assam	47.5	24.0	39.6
Bihar	32.6	14.6	22.5
Orissa	45.3	44.0	41.7
West Bengal	59.1	42.2	47.7
North Eastern States	49.3	33.0	45.8
Gujarat	56.8	49.0	54.2
Maharashtra	55.6	45.8	47.3
Goa	62.1	46.1	54.0
Andhra Pradesh	51.1	40.3	39.1
Karnataka	49.0	34.4	39.6
Kerala	63.7	64.4	73.2
Tamil Nadu	59.1	56.6	51.3
Pondicherry	66.5	77.2	57.2
Madhya Pradesh	39.5	39.6	31.5
All India	45.5	33.8	37.5

Note: *Includes SC/ST.

Source: ORG-3.

Table 18: Change in Family Planning Usership (Current Users) During 1970-88

Religion	1970	1980	1988	Increase		
				1970-80	1980-88	1970-88
Hindu	14	36	46	22	10	30
Muslim	9	23	34	14	11	25

Source: ORG-3.

too". This is convoluted logic. The point at issue is not whether the fertility of the Muslims declined with increasing educational level of the wife. Rather, the point at issue is whether the fertility of the Muslims is the same as that of the Hindus, educational levels of the wives being the same? As can be seen from Table 9, educational levels of the wives being the same, Muslims have a larger number of live births than Hindus. This is true of all the three levels of education. Can't we attribute the excess number of live births of Muslims to their reluctance to accept the idea and some method or the other of family planning? As we will soon see, we certainly can.

One commonly advanced argument is that literacy and income levels being the same, Muslims have the same fertility as that of the Hindus. We have just seen that this is not true for literacy levels. Is it true for income levels? Table 10 presents data on income levels and fertility. It is immediately clear that the fertility of the Muslims is higher than that of the Hindus at every income level. A careful reading of Table 10 reveals that as the income level increases, the difference in the average number of live births of the Hindus and the Muslims increases: the difference in the average number of live births is minimum at 0.27 for the groups with a monthly income of up to Rs 500 and maximum at 0.56 for the groups with a monthly income of Rs. 1,501 or more. The data presented in Table 10 clearly show that there is no substance in the argument that income being the same, fertility level of the Muslims is the same as that of the Hindus.

IV Differentials in Family Planning Acceptance

Facile assumptions are made regarding family planning acceptance by Muslims and equally facile arguments are advanced by some analysts. For example, Mistry (1993b) opened her article with the sentence, "It is often argued that Muslims do not practise family planning because Islam is against it". Shariff (1995: 2952) has said that a common allegation is that "... Muslims are against the use of family planning". Both have argued that Muslims are accepting family planning. Who has said that Muslims do not practise family planning or are against the use of family planning? Nobody. All that has been said and still is being said is that the family planning acceptance rate of Muslims is lower than that of Hindus. Then the analysts argue that the acceptance rate of Muslims is lower than that of Hindus because the former are socio-economically weaker than the latter. But even in the socio-economically comparable groups of Muslims and Hindus, the acceptance rate is lower among the former than among the latter. What could be the reason? The analysts have no answer.

We will now turn our attention to the controversy whether Islam permits or does not permit family planning. The Arabic language and Quranic language and grammar are so complex that sometimes the same verses in Quran and the same Hadith (sayings of the Prophet) are interpreted in different ways by different scholars and religious leaders [Mahmood 1977: 24-26]. There is no agreement even on the meaning of some of the concepts. "In Arabic the equivalent of birth control is 'azl. This word literally means removal, insulation, dismissal, separation or segregation Some people believe that 'azl is a specific word signifying a particular method of birth control, namely, coitus interruptus" [Mahmood 1977: 25-26].

One of the verses in Chapter II of the Quran has said "Your women are lands (harth) for you; so plough them as you wish" [Mahmood 1977: 17]. This is interpreted in different ways. Hazrat Abu Hanifa, the great Imam of the Muslims, has said that it means "You can cohabit with your women with or without contraception ('azl)" [Mahmood 1977: 17].

If some Islamic scholars and religious leaders said that some verses in the Quran or Hadith supported family planning, others said that they were interpreted out of context or cited some other verses in the Quran or Hadith which opposed family planning. In many Muslim countries like Egypt, Jordan, Turkey and Malaysia jurists of Islam have unanimously given their verdicts that Islam permits birth control. "In the Indian subcontinent, however, there are many Muslims who think that family planning and birth control are repugnant to the basic teachings of Islam" [Mahmood 1977: 129]. Thus, there are two groups of Islamic scholars and religious leaders in the Indian subcontinent: one group supporting family planning and the other opposing it. Similarly, there are two groups among the lay Muslim public. One group favours family planning and the other opposes it. In fact, family planning programme is viewed by the latter group with suspicion. Based on the findings of an important study in south India, it is observed that, "They (Muslims) regard the family planning programme as a creation of the Hindu State and, frequently asserting that sterilisation is opposed to Koranic law, they say that they adhere to the morality of the Book rather than to changing social and political morality" [Caldwell, Reddy and Caldwell, 1988: 247]. It appears that the opposition of Muslims is stronger to sterilisation than to temporary methods. There is more or less unanimous agreement on coitus interruptus ('azl). "The Prophet did, however, prohibit the use of the method ('azl) if the woman did not consent to the practice" [Shabbir 1991: 166]. If some Muslims accept sterilisation, others try to excommunicate them. "The pressures within the Muslim population against sterilisation are often coercive. They range from refusal to eat with the sterilised, to accept food from them (there are clearly undertones of a Hindu type here), to have them as servants, or to allow them to be buried

Table 19: Profiles of Current Users of Various Family Planning Methods, 1970, 1980 and 1988

Year	Religion	Vasectomy	Tubectomy	Condom	IUD	OP	Diaphragm/ Jelly/Foam Tablets	Withdrawal/ Rhythm/ Abstinence
1970	Hindu	94.5	92.7	92.0	80.1	89.7	95.2	91.4
	Muslim	2.4	4.7	5.8	16.5	7.3	4.8	4.5
1980	Hindu	87.7*		78.2	83.7	80.6	NA	NA
	Muslim	5.2*		10.9	7.3	15.2	NA	NA
1988	Hindu	88.7*		79.6	78.7	80.1	NA	NA
	Muslim	6.5*		11.2	10.1	16.8	NA	NA

Note: * Sterilisation, i.e., includes both Vasectomy and Tubectomy.

Source: ORG-1, ORG-2 and ORG-3.

in the Muslim burial ground" [Caldwell, Reddy and Caldwell, 1988: 247].

The views of Muslims who think that Islam favours family planning are summarised by Omran (1992: 238) as follows: (i) There is no text in the Quran prohibiting prevention of pregnancy, (ii) pregnancy prevention is not killing, (iii) modern birth control methods are, by analogy, permissible, (iv) temporary sterilisation is permissible, but permanent is not, (v) abortion after 120 days is prohibited except to save the mother's health, (vi) artificial insemination with the husband's sperm is allowed, and (vii) no law should coerce people to use contraception or to fix the number of children. The views of Muslims who think that Islam does not permit family planning are summarised by [Mahmood (1977: 107-108)] as follows: (i) Family planning stands for infanticide which is a big sin under the Quran, (ii) family planning means an illegal distortion of Allah's creations, that is, distortion of nature, (iii) family planning amounts to interference with the secrets of the Creator of the universe, (iv) family planning stands on the foundation of disbelief in the providence and in the divine responsibility to take care of each of His creatures, (v) family planning would mean overlooking the Prophet's desire that the Muslims should increase their number, (vi) family planning is an expression of feminine perversity and of women's search for freedom from domestic liabilities, whereas Islam wants to see every woman only as the lady of the house, (vii) family planning is unnatural, (viii) family planning leads to disastrous social consequences and encourage immoral practices, and (ix) family planning is a fraud being committed by the imperialist west on the developing east". Of these nine main arguments of the Muslim opponents of family planning, the first six have a religious basis.

With the foregoing brief review of the influence of Islam on family planning, let us analyse data on the differentials in family planning acceptance by Hindus and Muslims in India.

Table 11 presents data on who plays major role in deciding the number of children a couple should have. It was the husband who decides in 51 per cent of the cases among Hindus and 55 per cent of the cases among Muslims. In a male-dominated society, it is not surprising that in a majority of cases, husband decides the number of children he and his wife should have. In 36 per cent of the cases among Hindus, as compared with only 28 per cent of the cases among Muslims, both husband and wife decide. Thus, in a vast majority of the cases among both Hindus and Muslims, husband alone, and husband and wife take the decision on the number of children. It is somewhat surprising that only in about nine per cent of the cases decision regarding the number of children that a couple should have is taken by the elder members of the family.

Table 12 shows the proportion of couples reporting that they had talked to each other about the acceptance of family planning. There is an increase in the percentage of couples, among both Hindus and Muslims, who had talked to each other about family planning over a period of time. Table 13 presents data on change in the inter-spouse communication on family planning. Presenting data on inter-spouse communication on family planning in 1980 and 1988, Shariff (1995: 2952) has observed, "It is noteworthy that the change has been highest among the Muslims, regarding a 20 percentage point higher than in 1980 which is more than an increase among the Hindus which is only 16 percentage points". As can be seen from Table 13, the increase in the proportion of respondents reporting discussion on family

planning with their spouses between 1970 and 1988 is 32.8 points in the case of Hindus and 30.8 points in the case of Muslims. Why didn't Shariff consider the figures for 1970 as the base, instead of the figures for 1980? Is it because it goes against his argument? Does he not know the existence of the report on the first survey (1970) of family planning practices in India by the Operations Research Group, Baroda? He does; he has used data from his report in his article. Some analysts have always built their case on a selective interpretation of a selective set of statistics.

There is another flaw in Shariff's argument. He has equated increase in the proportion of Muslim respondents reporting communication on family planning with their spouses with increase in family planning acceptance [Shariff 1995: 2952]. To be sure, communication between spouses need not always result in family planning acceptance; it may result in its rejection also.

Table 14 provides data on differentials in the desire to limit family size in 1992-93 and 1998-99. The proportion who want no more children is higher among Hindus than among Muslims in both 1992-93 and 1998-99. Some analysts may be tempted to argue that the increase in the percentage of currently married women who want no more children is about the same, that is, about seven points, among both Hindus and Muslims between 1992-93 and 1998-99. The issue is not that. Rather, the issue is why isn't the gap narrowing down? Even among the older women, the proportion of those who want no more children is lower among the Muslims than among the Hindus. As can be

Table 20: Per cent of Currently Married Women Using Any Contraceptive Method, 1992-93 and 1998-99

Year	Hindu	Muslim
1992-93	41.6	27.7
1998-99	49.2	37.0

Source: NFHS-1 and NFHS-2.

Table 21: Percentage of Currently Married Women Using Any Method by Education, India, 1992-93 and 1998-99

Year	Religion	Illiterate	Literate < Middle School	Middle School Complete	High School Above
1992-93	Hindu	35.1	52.2	51.7	55.2
	Muslim	21.8	37.2	40.5	44.9
1998-99	Hindu	44.2	57.2	52.2	57.5
	Muslim	31.3	45.1	46.4	46.1

Source: NFHS-1 and NFHS-2.

Table 22: Per Cent Distribution of Currently Married Women by Any Contraceptive Method Currently Used by State, 1998-99

State	Hindu	Muslim
Bihar	27.3	9.1
Gujarat	59.8	58.0
Haryana	63.3	28.7
Karnataka	60.1	44.2
Kerala	71.6	47.2
Madhya Pradesh	44.0	45.3
Maharashtra	62.0	49.1
Orissa	47.1	34.6
Punjab	68.2	50.2
Rajasthan	41.4	25.4
Tamil Nadu	52.3	48.9
Uttar Pradesh	29.2	21.0
West Bengal	69.8	56.3

Source: NFHS-2 State Reports.

seen from Table 14, the proportion of currently married women, with two living children, who do not want any more children is as high as 61 per cent among the Hindus, as compared with only 39 per cent among the Muslims. This table clearly shows that fertility aspirations of Muslim women are higher than those of Hindu women.

Table 15 presents data on the per cent of couples who have ever practiced and are currently practicing different family planning methods. It is immediately clear that the proportion of couples who have ever practiced or are currently practicing family planning methods is higher among the Hindus than among the Muslims. It may be observed that there is virtually no difference between Hindus and Muslims as far as the adoption of women-oriented methods are concerned. But there is considerable difference between Hindus and Muslims in the adoption of men-oriented methods. This clearly shows that Muslim men are more rigid than their wives in the adoption of family planning. As assistant director and director of the population centre, Bangalore for 4 and 16 years, respectively, the present author has conducted and directed scores of surveys of fertility and family planning in Karnataka and Andhra Pradesh. In these surveys, he observed Muslim women respondents saying that they wanted to adopt family planning but their husbands objected to it. Some of them took our female interviewers into confidence and confessed that they had got IUD inserted without the knowledge of their husbands. Table 15 further shows that the proportion of Muslim couples who adopted abstinence/withdrawal is fairly high. This is perhaps because some Muslims believe that Islam permits the adoption of non-terminal methods.

Table 16 presents data on the practice of family planning by educational level of wife. "An analysis of variance has revealed that the differences between the three religious groups at the illiterate level of education of wife are statistically significant. At the primary level, the practice among Muslims is significantly lower than the other two religious groups" [ORG 1970: 43]. But at the secondary school or college level of education, the differences between religious groups are not statistically significant. Thus, it is clear from Table 16 that even when educational levels of wives are the same, Muslims lag behind Hindus in the practice of family planning.

Table 17 turns to consider the per cent of couples currently using any family planning method by state. The proportion of couples currently using any family planning method is higher among Hindus than among Muslims in India. With the exception of Pondicherry, where the proportion of couples currently practicing family planning is higher among Muslims than among Hindus, and Madhya Pradesh, where the two proportions are the same, the proportions practicing family planning are higher among Hindus than among Muslims. In some states and union territories like Haryana, Himachal Pradesh, Punjab, Chandigarh, etc, the proportions of couples practicing family planning are much higher among Hindus than among Muslims.

Table 17 also presents data on the proportion of couples practicing family planning among scheduled castes/tribes. In all the states and union territories, with the exception of Tamil Nadu, Pondicherry and Madhya Pradesh, the proportions of couples practicing family planning are higher among scheduled castes/tribes than among Muslims. In some states the differences are quite wide. Can anyone say that the socio-economic conditions of SC/ST are better than those of Muslims? No one can. Thus, there is no substance in the argument that socio-economically Muslims are

backward and hence the family planning acceptance rate is lower among them.

Table 18 shows the per cent of eligible couples currently practicing family planning in 1970, 1980 and 1988 and changes in the proportions currently practicing between 1970 and 1980, between 1980 and 1988 and between 1970 and 1988. In all the three years, the proportion of couples currently practicing family planning is higher among the Hindus than among the Muslims. The increase in the percentage of couples practicing family planning between 1970 and 1980 is 22 points among the Hindus and only 14 points among the Muslims. The increase between 1980 and 1988 is about the same among the Hindus and Muslims. The increase between 1970 and 1988 is 32 points among the Hindus and 25 points among the Muslims. Thus, the gap in the percentage of couples practicing family planning between Hindus and Muslims is widening instead of closing down.

Table 19 presents profiles of current users of various family planning methods in 1970, 1980 and 1988. In all the three years, the percentage of Muslims among the vasectomy and tubectomy acceptors is much lower than their proportion in the total population. Their proportion among the acceptors of spacing methods, especially among the women-oriented methods of IUD and oral pills, is somewhat encouraging. In 1980 and 1988, the proportion of Muslims using condom has increased. The data in Table 19 once again confirm that Muslims prefer non-permanent methods over permanent methods.

Table 20 shows the percentage distribution of currently married women using any contraceptive method in 1992-93 and 1998-99. In both 1992-93 and 1998-99, the percentage of currently married women using any contraceptive method is higher among the Hindus than among the Muslims. The difference between the two groups is about 14 points in 1992-93 and a little over 12 points in 1998-99. There is a slight decline in the difference between the two groups in 1998-99, as compared to 1992-93. This is somewhat encouraging.

Table 21 shows the percentage of currently married women using any family planning method by level of education in 1992-93 and 1998-99. At every level of education, the percentage of currently married women using any family planning method is higher among the Hindus than among the Muslims in both 1992-93 and 1998-99. It may be observed that there is slight decline in the difference between the two groups between 1992-93 and 1998-99 at the first three levels of education. But there is a slight increase in the difference between the two groups between 1992-93 and 1998-99 at the last level of education.

Table 23: Percentage Approving or Disapproving Family Planning in 1970 and 1980

Attitude	Hindu	Muslim
Approves		
1970	60	53
1980	83	65
Difference	+23	+12
Disapproves		
1970	40	47
1980	16	33
Difference	-24	-14
Neutral		
1970	-	-
1980	1	2
Difference	-	-

Source: ORG-2.

Although Table 21 shows current use and Table 16 ever use, comparison between the two tables is instructive. Despite the passage of time (1970 to 1992-93 and 1998-99), the difference in the proportion of couples practicing family planning persists, in spite of the educational level of wife being the same.

Table 22 turns to consider the percentage distribution of currently married women currently using any contraceptive method by state. In 1998-99, the percentage of women currently using any method is higher among the Hindus than among the Muslims in all the states, except Madhya Pradesh. In states like Haryana, Kerala and Rajasthan, the proportion of women currently using any method is much higher among the Hindus than among the Muslims.

Table 23 juxtaposes the results of the first (1970) survey with those of the second (1980) survey conducted by the ORG. The table shows that during the 10-year period there is significant increase in the percentage of couples approving family planning. But – this is important – the increase in the percentage of couples approving family planning is 23 points among the Hindus, as compared with only 12 points among the Muslims. Correspondingly, the percentage disapproving family planning decreased by 24 points among the Hindus, in contrast to only 14 points among the Muslims.

The second all-India survey of family planning practices conducted by the ORG in 1980 probed into the reasons for not adopting any family planning method either at the time of the survey or in the future. This question was put to the respondents who were not practicing family planning at the time of the survey and who also said that they would not practise it in the future. It is important to know that as high as about 52 per cent of such Muslim couples, as compared with only about nine per cent of Hindu couples, gave the following reason: "not interested in family planning/do not believe in family planning/against religion" [ORG 1983: 149]. This clearly shows that a far greater percentage of Muslims than Hindus are against family planning on religious grounds. The foregoing data and analysis convincingly demonstrate that the Muslim population is growing at a faster rate than Hindu population, the fertility of Muslims is higher than that of Hindus and the family planning acceptance rate is lower among the Muslims than among the Hindus. The controversy could be brought to an end if the analysts who vainly try to justify the higher population growth rate of Muslims, their higher fertility and their lower family planning practice rate concede the fact and try to educate the lay Muslim public that in their own interest and in the interest of the country, they should adopt family planning and reduce their fertility. [27]

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The marriage ratio

25 AUG 2003

INDIAN EXPRESS, MUMBAI

BY RAVINDER KAUR

CAN two such negative social trends as dowry and the poor sex ratio ever yield anything positive? While the large print (national media) dwells on divisive issues like caste and religion, the small print (regional media) is documenting events that may have far reaching significance for Indian society. M.N. Srinivas once referred to the transformation of India through the democratic process as a silent revolution; another unheralded revolution is being ushered in by that most intimate, and conservative, of human institutions, marriage. The desire to escape dowry coupled with the shortage of women is causing people to search for matches outside conventional boundaries. In the process, bringing Indians of all hues together?

Both national and vernacular media have been reporting incidents of "sale" of girls to the affluent but female deficient states of Haryana and Punjab. These girls are from poor families in West Bengal, Bihar, Assam, even Andhra Pradesh. But the national media has largely ignored a parallel phenomenon — an increase in marriages taking place across regional, linguistic and cultural barriers which are yet difficult to classify as instances of sale. Although the buying of women traditionally took place among landed men looking for "farm wives", several of these "new" marriages are between low caste individuals unable to find spouses in their respective communities.

For the educated, English speaking elite, breaking caste and language barriers is not new. For the average, especially rural, Indian, however, marriage has been governed by traditional rules of caste and community. Of these, dowry has been one of the most important. It is this albatross that may have led cou-

northwestern female-unfriendly states, son preference and easy accessibility of sex detection technologies has led to an acute shortage of women. As a result, men are resorting to matches in distant states with women from whom they are culturally distant.

These inter-regional marriages are taking place in increasing numbers. Consider two examples: A man in Uttar Pradesh marries a girl from a Bengal village. A Rajasthan man marries a girl from a village in Vizag

become clear on closer examination. It is often the younger brothers who have to seek a bride from afar. Kallu from Etah district of UP, for example, was fourth in a family of four brothers and three sisters. Of the four brothers, two married women from UP in conventional dowry marriages. For a third brother, the Bengali wife is his third wife, the first two having died, one of snakebite and the other in childbirth. With two deaths to their "credit", Kallu's family was unable to recruit another

The sex-ratio 'emancipated' men from Uttar Pradesh and Punjab now have a choice: Either never to marry, or get married and not receive any dowry!

in Andhra Pradesh. These are marriages between poor, illiterate people. The partners do not even have a common language. Why would they agree to such a liaison? The answer unfortunately lies in the twin evils of the sex ratio and dowry.

Areas like Punjab and Haryana have only four eligible women for every five men. This push factor means that men have to stray afar to find a bride. But why should a woman from Bengal or Andhra Pradesh, areas where the sex ratio is near even, marry a complete "foreigner"? Because these women, and their parents, do not want to, and/or cannot, provide a dowry. The sex-ratio "emancipated" men from UP and Punjab now have a choice: Either never to marry, or marry and not receive any dowry! Does marriage win out over dowry? Do girls get to live? Yes.

The logistics of these matches

and, had not come up with any instance of sale.

The fact that the receiving family properly incorporates the bride into the family is important. She is not considered a concubine nor is she discarded after a while or passed into prostitution. That she is not ill-treated, also distinguishes these marriages from the sale of girls. These marriages are socially accepted as they follow the correct caste rules. Since marrying off the daughter remains the pre-eminent duty of the parents, such non-dowry marriages bring social adulthood to the woman and allow the father to preserve the honour of the family. In most of these cases, he does not gain monetarily from the marriage.

It is clear that poverty, dowry and the sex-ratio are playing an important role in cross-regional/cultural marriages. The girls are clearly from poorer states, districts and villages. The marriages involve less expenditure for both sets of parents than a marriage within the community would. Such marriages may indeed provide a more hopeful future for the girls and a less promising one for dowry.

The larger picture is that species cannot survive with preference for only one sex. The traditional Indian values of son-preference and dowry have resulted in a distorted sex-ratio. Across region alliances extend the marriage market and help reduce the distortion. This happy circumstance, however, can only provide a short-term answer to the larger problem of devaluation of women in Indian society. It is only an improvement in girls' education and women's property rights that will turn the "unintended positive consequence" of the twin evils of sex ratio and dowry — i.e., greater social integration — into a real gain.

The writer is assistant professor, sociology, at IIT, Delhi.

Govt bid to achieve population stabilisation

NEW DELHI, Aug 4 — In a bid to achieve population stabilisation in the country, Government today said in the Rajya Sabha that it proposed to introduce a Centrally Sponsored Scheme under which cash assistance of Rs.500 for birth of male child and Rs.1000 for female child would be given to women belonging to Below Poverty Line (BPL) upto two live births, reports PTL.

The 'Janani Suraksha Yojana' under the National Family Wel-

THE ASSAM TRIBUNE
5 JULY 2003
fare Programme is proposed to be introduced by integrating the existing National Maternity Benefit Scheme and other ongoing Maternal Health Schemes and its proposed outlay for the 10th Plan will be Rs.500 crore, Health Minister Sushma Swaraj said in a written reply.

Establishing 8,669 additional health sub-centres during the period at an outlay of over Rs.400 crore and promotion of planned parenthood besides creation of an Empowered Action Group to

focus on Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, Orissa, Uttaranchal, Chhattisgarh and Jharkhand are some important features of the scheme.

AIDS vaccine: The office of the Drug Controller General of India would be approached for permission to import AIDS vaccine and to conduct Phase-I trials on humans in India as and when the immunogenicity and toxicity studies in respect of the vaccine being developed are

completed, Swaraj said.

Monkey Disease: Monkey Disease or Kyasanur Forest Disease (KFD) has affected 283 persons and claimed ten lives this year in Karnataka while the total number of people affected due to the disease in the state during the last three years is 440, Swaraj said in reply to another question.

Chicken Pox: Over 1,500 cases of chicken pox was reported in Delhi during the last one year, Swaraj said.

Population panel plans pilot projects in private hospitals

By Our Staff Correspondent

NEW DELHI, AUG. 17. The National Commission on Population is launching pilot projects to provide maternal, child health and contraception services through public-private partnership in high growth areas. The Commission has selected some districts in the high-fertility States for supplementing the existing governmental efforts in the delivery of pre and post-natal care, assisted deliveries, immunisation and contraception services by involving private hospitals.

The concept aims to monitor each pregnancy in the selected villages until the birth of the child and provide the basic maternal, child health and contraception services to the family.

The process involves reporting pregnancies to the designated private hospitals through pre-coded printed post cards distributed to the households having eligible couples. On the event of a pregnancy, the family has to send a postcard to the designated hospital, which will keep track of the case. The cost for these facilities will be borne

by the Commission. A user-charge-supported or insurance-based system will be worked out in due course. The Commission will monitor the implementation of the programme through the district magistrate who will be the project director.

According to the Reproductive and Child Health Survey, 1998, the unmet needs for contraception are high in Bihar (42 per cent), Uttar Pradesh (38 per cent), Rajasthan (28 per cent) and Madhya Pradesh (27 per cent). About 60 per cent of the growth can be attributed to the large size of population in the reproductive age group, which is often referred to as the 'momentum' factor. Another 20 per cent of the growth in population is due to the high unmet needs for contraception and the remaining 20 per cent due to socio-economic factors such as high infant mortality, low status of women, preference for son, illiteracy and poverty.

However, since the main problem relating to population stabilisation is the high levels of unmet needs for contraception, maternal and child health care

services prevailing in high-fertility States such as Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, Uttaranchal and Orissa.

The National Population Policy (NPP) 2000, aims to fully meet the unmet needs for basic reproductive and child health services at the earliest.

SC RULING ON HARYANA'S TWO CHILD NORM

Population policy duality comes to fore

PIONEER

1 AUG 2003

Pioneer News Service

New Delhi

WITH THE Supreme Court upholding Haryana's legislation barring persons with more than two children from holding senior position in the village Panchayat, the focus has once again shifted to the duality in population policy at the Central and State levels. The National Population Policy, revised by the Union Health and Family Welfare Ministry in 2002, is silent about making role models of people's representative for promoting small families. Rajasthan, Madhya Pradesh, and now Haryana decided to digress from the national policy. Even Uttar Pradesh and Andhra Pradesh have devised incentives in Government dole and jobs for people heading small families.

"The Health Ministry is not averse to change in population priority. While it still maintains that development is the best deterrent to the galloping population, it feels that there might be a case for further emphasis on promoting small families by advocating the two child norm. "We discussed the issue even during the revision of the 2000 policy, but there was no consensus over it. Plus, there were vehement protests from some women's groups (that such a policy will discriminate against poor women)," sources in the Union Health Ministry said.

In the previous session of Parliament, Health Minister Sushma Swaraj had informed the House that a Government Bill to debar members of Parliament and Legislative Assembly from contesting elections if they have more than two children, has been pending in the Rajya Sabha

since 1992. Efforts have been made by the ministry to take advocate the two-child family policy at the Parliamentary Consultative Committee attached to the ministry. Members of the committee not wanting to be quoted said, "we have told the Government to take sterner steps to check the population when we discussed the issue several times." Ministry sources, however, said that "no one will come out with the opinion openly because it will harm (interests of) some people."

That leaves the National Population Commission, under the Planning Commission, the only vocal proponent of the two child policy. Talking after Wednesday's SC judgement sources at the Commission said that "it will help if there is an open policy to move towards two-child family, without yielding to coercion or compulsion to enforce the policy."

The Population Commission also feels that while southern India is restricting their family to two children, northern India, especially Uttar Pradesh and Bihar, are undoing efforts by progressive States by having four to five children. "This imbalance will lead to social, political and migration problems in the regions," sources said. On its part, the Health Ministry will continue its efforts to bring around consensus over the issue in the current session of Parliament, sources said. The ministry has set up an Empowered Action Group to monitor population stabilisation programme in 200-odd select districts of Uttar Pradesh, Bihar, Jharkhand, Rajasthan, Madhya Pradesh and Chhattisgarh which have a poor track record of population stabilisation.

SC upholds Haryana law on two-child norm

DECCAN HERALD

13.1.2003

NEW DELHI, Jan 13 (UPI) — In a major ruling that could be a precursor to an effective family planning in the country, the Supreme Court today rejected the plea of some Muslim panchayat members from Haryana that their adherence to the two-child norms under the State Panchayati Raj (Amendment) Act 1994 was violative of their fundamental right to freedom to practice and profess religion.

Upholding the Haryana legislation barring village panchayat members from becoming the sarpanch or up-sarpanch if he or she had more than two children, a three-judge bench comprising Mr Justice R C Lahoti, Mr Justice Ashok Bhan and Mr Justice Arun Kumar said this law did not violate Articles 14 (right to equality), 21 (right to life and liberty) and 25 (freedom of religion) of the Constitution.

Dismissing more than 200 petitions challenging the Act, the Supreme Court also nullified the practice by some members giving their third child in adoption and said once the disqualification has been incurred by them, he or she could not escape the consequences of giving the third child in adoption to other relatives.

BOYS ON TOP



Despite a slew of laws against sex determination, there is a yawning gap between male and female births. **Vijaylakshmi Balakrishnan** reports

TELEGRAPH 30 JUL 2003

It's the most politically correct set of laws that still stubbornly refuses to grow teeth. Every now and then, instances of its violation hit newspaper headlines and elicit appropriate posturings from the powers that be. Over four decades in public debate, over nine years as a legal mandate — still the yawning gap between the two genders continues to widen. We're talking about female foeticide, of course. And it's in the news once again, with two of Mumbai's high-profile doctors, Anirudha Malpani and wife Anjali Malpani, getting caught by the long arm of the law.

Last fortnight, the Supreme Court of India (SCI) ordered action against the two for hawking banned sex determination techniques on their website. The website proudly offered to help couples to go in for "the ultimate form of family planning" by "selecting" the sex of their baby. That, too, with the sophisticated pre-conception sex selection technique. The SCI cracked the whip on the charge that the Malpanis were violating the newly amended Pre-Conception and Pre-Natal Diagnostic Techniques (PNDT) (Prohibition of Sex Determination Act), 1994.

Last month in West Bengal, concerned at the increasing gap in the male-female ratio and the rampant elimination of female foetuses, the health department forced at least 18 nursing homes and private clinics to close. The month before, one saw Union health minister Sushma Swaraj, announcing on the floor of the lower house, that on the birth of a girl child the parents would leave the hospital with a cash reward of Rs 1,000. The reward would be halved in case of a boy. Swaraj explained that the differential was designed to counter the growing culture of female foeticide.

Ground rules

▶ The Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994, was brought into operation from January 1, 1996. The Act prohibits determination and disclosure of the sex of a foetus. It also prohibits any advertisements relating to pre-natal determination of sex.

▶ The PNDT Act and Rules have been amended keeping in view the emerging technologies for selection of sex before and after conception and problems faced in the working of the Act. These amendments have come into operation from February 14, 2003. These amendments have brought the technique of pre-conception sex selection within the ambit of this Act. And have made punishments more stringent.

Female foeticide, an extreme form of population control and a manifestation of the cultural bias for males, has reached critical levels. The recurring legal sanctions, rewards or awareness campaigns indicate that despite government and civil society efforts, the PNDT Act is largely ineffective.

Drastic changes in the demographic profile on the ground reveal just how ineffective the Act has been. Take the case of Sirsa district of Haryana, where sex determination tests began to be advertised in the early 1980s. Billboards encouraged expectant parents to visit centres to learn if the foetus was a "healthy boy" or a "girl". Media reports suggest that every day, at least 20 to 25 female foetuses were aborted in the district alone. Though mooted in Parliament, a ban on sex determination tests had been ruled out on the grounds that it was for the people to change their attitude to female children. The sex ratio among children below the age of four in Sirsa in 1991 was 896 girls to 1000 boys. It dipped down to 818 girls for every 1000 boys in 2002. And Sirsa is just one example.

A concerted campaign to ban sex determination tests began first in Maharashtra. The Forum Against Sex Determination and Sex Pre-Selection (FASDSP) was formed in Mumbai in October 1985. Its members were from varied backgrounds — lawyers, feminists, health and human rights activists, people involved in the people's science movement. It drafted a bill and had it introduced in the state assembly. The bill laid the foundation for the entire legislative exercise at state and central government levels that led up to the law banning sex determination tests in 1994: the Pre-Natal Diagnostic Techniques (Prevention & Misuse) Act.

Over the next few years, though the act was in place, the number of clinics offering amniocentesis tests multiplied and instances of abortion of girl foetuses rose. Amniocentesis tests became more expensive as the clinics became more circumspect. In 2000, a writ petition was filed by several NGOs against the Union of India, in the SCI. In its judgment, the bench pointed out that it had taken the states nearly one year to respond to the court's directive and held, "neither the state governments nor the central government has taken appropriate actions for the implementation" of the Act.

The law may have provided some protection to the unborn girl child by banning sex determination tests. What it has not tried to change is the social attitude that encourages the practice. To date, female foeticide remains closely linked to dowry. And as long as brides continue to be blessed with, 'May you be the mother of a thousand sons', the reach of the law will continue to elude the common people.

Gender discrimination

9 AIC 2002

en the weaknesses in public health
ices and the high cost of private health
; it is inevitable that women are
ersely affected. To be effective, the
roductive and Child Health programme
have to address improvements in the
ice delivery systems, along with
grating population and development
mainstream development planning,
; Rama V Baru.

The underlying philosophy was to reduce public spending and increase the role of the market to provide curative services. A set of common elements, therefore, defined the content of health sector reforms across the world and this included privatisation of health services, contracting out, introduction of user fees, decentralisation and so on. Multilateral and bilateral agencies played an important role in initiating these measures through the loans and grants they provided to developing countries. That these loans were tied to certain conditions that have implications for policy is amply demonstrated in the Indian situation. During the '90s, the first batch of loans in the health sector was for a specific set of communicable disease control programmes. These included malaria, tuberculosis, leprosy and HIV/Aids. The conditions tied to the loans included the focus on some diseases and also the drugs to be used. The second set of loans was for reform of the secondary and tertiary levels of care, namely hospitals at the district and state levels. A few states like Andhra Pradesh, Maharashtra, Karnataka, Punjab and West Bengal are a part of this project. One of the programmes that received considerable donor support is the RCH programme. Three documents shaped the content of the RCH programme in India. The first was the document produced at the International conference on population and development (ICPD) at Cairo that

provided an overarching framework for reproductive health and reproductive rights. This document was followed by two World Bank publications - 'India's family welfare programme: Towards a Reproductive and child health approach' (1995), and 'Improving women's health in India' (1996). These documents set the stage for a debate on the content of a reproductive health programme. Thus, the World Bank, along with UNFPA, the European Commission and the UK's department for International development (DFID) emerged as key players in setting the RCH agenda in the country. The government of India (GoI) launched this programme in October 1997. It is known to be the largest national programme in the world for translating the ICPD agenda into action. As a whole, it includes reproductive health, child health, reproductive tract infections (RTIs)/sexually transmitted infections (STIs) and adolescent health. Its objective is to improve maternal and child health and reduce fertility rates. Funds for the programme come from the World Bank, several bilateral agencies and GoI; the latter's contribution is roughly 44 per cent. The RCH project is dependent on the general health services at the primary, secondary and tertiary levels of care. Therefore, its outreach and effectiveness is determined by the state of the public health services system.

Studies have shown that a set of services are provided at the Primary Health Centre (PHC) level which include institutional deliveries; laboratory facilities for RTI screening and, in a select number of PHCs, abortion facilities. The district hospitals are expected to provide the remaining package of essential services. However, this approach does not build in the referral system into the programme, thus weakening its impact. Also, since the RCH programme is supported by a number of donors, it has meant that each donor sets its own priorities without any integration at the different

HEALTH

levels of the health services administration. Besides, each donor tends to focus on specific states or areas, which results in fragmentation or sometimes, unnecessary duplication of the programme. A closer analysis of the RCH programme reveals that it is merely an aggregation of existing vertical programmes, with different projects filling the gaps in selected areas. The programme has not addressed the linkages within the health services and the socio-economic conditions of women - both of which are crucial for effective implementation. Apart from the provision of health services, the implementation of an integrated reproductive health and rights

approach must necessarily address the factors that affect the health status of people. Undeniably, poverty is a major factor that influences the health status of populations. While there was some decline in both urban and rural poverty during the 1970s and 1980s, the rate of decline clearly slowed down during the '90s. This trend has had a negative impact on access to nutrition and health services, especially for the poor. Put together, all of these factors are impediments to the effective implementation of the programme, particularly in the context of widespread gender bias in nutrition and health care. Gender discrimination is well documented in terms of intra-household food distribution, as well as in access to health care.

Given the weaknesses in public health services and the high cost of private health care, it is inevitable that women are adversely affected. In real terms it means that women will find it difficult to access formal care and will experience recurring bouts of untreated illness. Clearly, many of these larger social constraints are beyond the scope of the health services to handle, and they question the development process itself. At the same time, it is also clear that to be effective, the RCH programme will have to address improvements in the service delivery systems along with integrating population and development into mainstream development planning.



RUBELLA

The Disease and Its Prevention

Rubella is a viral disease, which mainly affects the foetus, if a woman is infected with this virus during the early part of her pregnancy. Rubella infection, during this periods causes severe life-long disabilities in children since birth. The most common birth defects are deafness, cataract, mental retardation and heart defects. Many a time more than one defect manifests at the same time and this condition is called the Congenital Rubella Syndrome (CRS).

Rubella is a contagious disease and spreads through air by coughing, sneezing, or simply talking.

The prevalence and problem of Rubella in India

Since Rubella affects the foetus when the mother is infected in the early months of her pregnancy, all individuals unexposed to Rubella virus are at the danger of contracting Rubella. It has been observed that around 40-45% of women are susceptible to Rubella. Moreover, shockingly, an Indian study revealed that over 2 lakh babies are born in the Indian sub-continent with birth defects because of Rubella infection during pregnancy.



This study proved that Rubella was the cause of disability in about 1 out of every 5 cases of congenital malformed babies. Further, a study in Madurai revealed that Rubella was the cause of congenital cataract in 26.3% cases investigated. Another study, in Chennai found Rubella as the probable cause of deafness in 29% of 374 deaf children.

The symptoms and adverse effects of Rubella

Contrary to the serious adverse effects that Rubella causes, the presenting symptoms of Rubella are 'mild'. The patients usually have only mild fever with a slight rash, which passes off as some mild viral infection. In fact, one-third to one-half of all rubella infections doesn't produce symptoms at all making it more difficult to diagnose. This is another reason why rubella is incorrectly thought to be a mild disease.



Swelling of parotid gland in mumps

Rubella infection during the early months of pregnancy may lead to abortions and congenital deformities (birth defects). These birth defects include deafness, cataract, heart defects and mental retardation in newborns. Such children become social and economic burdens for parents

and need special care throughout their lives. The cost of maintaining these unfortunate children is also very high for both the parents and the Government Health system. Once infected, the chances of developing these deformities are very high if the infection occurs in the first three months of pregnancy. The following table gives the chances of a particular deformity developing:

Congenital deformities	Incidence
Hearing loss	60-75%
Heart Defects	40-50%
Eye Defects	50-90%
Psychomotor retardation	25-40%



Of those affected, 50% will attend school for deaf and 25% will require special schooling due to hearing problems.

Other common complications, which develop later, are:

- Insulin Dependent Diabetes (20%)
- Deafness
- Motor and Mental handicap
- Language defects

The incidence of deformities in the various stages of pregnancy

The Rubella virus interferes with the development of organs in the foetus leading to birth defects. Therefore, depending on the time of pregnancy and the organs developing during that time, the type and the chances of deformities developing in the child varies. The risk of deformities developing is as follows:

Time of maternal infection	Result
3-11 weeks	100% infected foetus
12 weeks	80% infected foetus
13-14 weeks	54% infected foetus
15-16 weeks	35% infected foetus
23-26 weeks	25% infected foetus

The treatment for Rubella

Unfortunately, there is no treatment for Rubella. Vaccination is the only way to prevent all these complications.

The efficacy of vaccination

The vaccine was first used in USA in 1969. This was after the devastating epidemic in the 1960s. There were a total of 12.5 million cases of rubella, with over 2000 cases of encephalitis (swelling in the brain) and 6250 abortions. At least 20,000 babies were damaged by CRS, including 8055 born deaf, 3580 deaf and blind and 1790 mentally retarded. It was estimated that there would be Rubella epidemics every six to seven years and ever since the vaccine was used there have been no Rubella epidemics in the USA. In fact the cases of CRS are almost non-existent now.

The vaccination schedule

Children can be protected against Rubella with a dose of MMR at 12-15 months. Moreover, a separate vaccine against Rubella is also available which can be used in children as well as adults.

Rubella vaccine should be given to:

- All girls at puberty (9 years and above).
- All women of child bearing age and if missed.
- Post delivery to protect subsequent pregnancies.

Even males should be vaccinated against Rubella because infected males can transmit this virus to the females of their family.

The length of protection

Vaccine against Rubella offers long term protection. Clinical reports state that sufficient antibodies are present in the blood even after 15 years of vaccination.

World-wide use of Rubella vaccine

Several countries have realized the importance of protecting their citizens from the dreaded effects of Rubella and hence, they

have all included compulsory immunization against Rubella through their Government Immunization Program. A total of 123 countries, which includes developing countries like Sri Lanka, have included Rubella vaccination. This represents about 57% of the countries in the world. The most compelling reason for Government in introducing this vaccine, apart from reducing disabilities, is the enormous cost saving that is achieved with the use of this vaccine. In 1994, it was estimated that in the USA, the total annual cost caused by Rubella would be \$601 million without the vaccine v/s just \$13 million with the vaccine.

Use of Rubella vaccine in India

Several countries have realized the importance of protecting their citizens from Rubella and some states in India too have taken steps in this regard. The states to take this commendable step are New Delhi and Tamil Nadu and they have included the MMR vaccine in their State Immunization Program. The Govt. of India has been as yet unable to include this vaccine in the National Program due to cost constraints. In India, Rubella vaccine is manufactured by the Serum Institute of India Ltd., the largest manufacturers of vaccines in India and is available as R-Vac. R-Vac contains the Wistar RA 27/3 strain of the rubella virus cultivated on Human diploid cells. This strain has an excellent record of efficacy and safety. The vaccine is known to induce immunity even in the nasal secretions, thus effectively blocking the virus at the point of entry itself. Studies have shown that the vaccine induces long term immunity of upto 15 or more years. Rubella vaccine can also be given in a combined vaccine as MMR vaccine, which is available as Tresivac.

Serum Institute of India Ltd.
501, 5th Floor, Dalamal Tower,
211, Nariman Point,
Mumbai - 400 021. India

Towards optimal infant feeding

7 AUG 2003

Food, health and care are necessary for the growth of the child, and breastfeeding alone provides for all these elements

DECCAN HERALD

By ASHA BENAKAPPA

"Breastfeeding is about peace and justice. It is the natural, universal and peaceful way of nurturing our children. In a world often wracked by injustice, violence and war, breast feeding can be a sentinel of peace — inner peace, peace with other people and peace with the environment," says Anwar Fazal, co-founder of world alliance for breast feeding action and Right livelihood award recipient.

The theme for the 12th world breast feeding week, observed from August 1 to 7, was 'Breast feeding in a globalised world for peace and justice'. In May 2002, the 55th world health assembly adopted the global strategy on infant and young child feeding. This strategy emphasises the need for exclusive breastfeeding for the first six months with the introduction of safe and appropriate complementary foods after six months with continued breast feeding for up to two years or beyond.

Optimal infant feeding improves nutrition, health and development of infants and young children, thus ensuring their survival. It includes initiation of breastfeeding immediately after birth, preferably within 30 minutes, exclusive breastfeeding for the first six months and appropriate complementary feeding starting after six months. Babies suckle for closeness, comfort and pleasure as well as because they are hungry. Food, health and care are all necessary and breastfeeding gives all the three elements to the infants.

Poor support

Globalisation is the term often used to describe the process of imposing harmonised rules of free trade and free financial flows throughout the world. In such an environment the needs of mother and children are easily jeopardised. Privatisation of public health has led to cut in public funds for health care. Public health programmes that promote breast

feeding no longer receive support. The disparities between the rich who can afford the private care and the poor who cannot are increasing.

International trade agreements administered under WTO are sometimes viewed as an obstacle to the ability of the nation to set its own health policies to protect the "baby consumer." 'Breast milk' is not a trade product comparable to infant formula and other baby foods. Government may put aside the trade commitments in order to protect the health of

the baby consumer. Breast milk substitutes are promoted as equivalent in nutritional value to mothers' milk. Also, the practice of giving free sample of baby milk and baby food has a devastating effect in the developing countries.

When newborns are given bottle, nipple confusion can result making them less able to suckle at the breast and thus increasing the breast feeding failure. The baby is then dependent on artificial feeds. When the mother and baby leave the hospital, the milk is no longer in. At home parents are forced to buy more milk, which can cost 50 per cent more of the family income. This results in malnutrition.

Historic action

The lack of immunological benefits of breast milk, unhygienic food preparation and unclean water leads to more illness in the baby and more expense. Infant milk and infant food are genetically manufactured. Inserted genes can disrupt a plant's natural growth and development or function. Genetically engineered foods have unintended effects with potentially harmful consequences for human health. Should we give these modified foods to young babies?

Parliament took historic action to approve the Infant Milk Substitutes, Infant Food and Feeding Bottles (regulation of production, supply and distribution) Amendment Bill 2003, strengthening the existing act of 1992. The amendment is now passed and will ban the advertising of all kinds infant milk substitutes and infant foods. The Amendment Bill also prohibits the following:

1) Promotion of all kinds of foods for babies under the age of 2 years

2) Promotion of infant milk substitutes, infant food and feeding bottles in any manner including advertising, distribution of samples, donations, using educational materials, and offering any kind of benefit to any person.

3) Promotion of products under its scope infant milk substitutes, infant food and Feeding bottles by a pharmacy, drug store or a chemist shop.

4) All forms of advertising infant milk substitutes, infant food and feeding bottles.

4) Use of pictures of infants or mothers on the labels of infant milk substitutes or infant foods.

5) Labelling of infant foods for use before 6 months.

6) Function of "health workers" or "an association of health workers" for seminars, meetings, conferences, educational course, contest fellowships, research work or sponsorship.

(The author, who belongs to the profession of medicine, is Bangalore District co-ordinator, Breastfeeding Promotion Network of India)

Vigorous efforts needed to check female foeticide

3 AUG 2003 by Priyanka Singh

THE TRIBUNE, CHANDIGARH

THERE has always been large-scale intolerance and tilt against the girl child in the rural areas. Only now, it is spreading fast and across the board. No section is free of this evil that has a long history and is not a phenomenon that has only recently manifested itself in our culture. This gruesome practice continues undeterred, more so in the northern parts of the country where the preponderance of a male child has become a compulsive obsession?

This trend is specific to north India as states such as Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Pondicherry have recorded a sex ratio of less than 900. A similar pattern emerges in Orissa and northeastern states. The net deficit of females in India which was 3.2 million in 1901 has widened to over 35 million in 2001.

Dr Rainuka Daggar, Senior Research Fellow in Chandigarh's Institute for Development and Communication, says North India always had an adverse sex ratio that was aggravated by the Green Revolution. Haryana has recorded a relatively higher literacy rate than the national average. However, the sex ratio is far below the national average, she says, adding that it has declined continuously since 1981 and is at its lowest since Independence.

The situation in Punjab is just as bad with the Planning Commission asking it to probe the falling sex ratio that is indicative of the acceleration in the incidence of female foeticide. What is startling is that the reaction to it is diminutive, not even a miniscule part of the response evoked by a Cola advertisement.

The statistics mock our belief

that we are a culturally and morally superior nation. These are reflective of moral decadence and not mere indicators of the demographic imbalance. We cannot afford to detach ourselves from the goings-on and be complacent spectators or meek participants. The word "negative" is used for a female foetus in clinics that offer sex determination



tests. Ultrasound and amniocentesis technologies were evolved to detect congenital abnormalities but these are being misused to identify female foetuses only to relegate them to the dustbin. It is horrifying that one word alone should seal her fate. Ironically, we still proudly recall some of the outstandingly eminent women achievers who have been at the helm of affairs and at the same time we continue to kill our daughters who have been fondly likened to Goddess Lakshmi and with as much reverence.

We need to have respect for human life as it concerns all of us. We might not be able to change things overnight but steps have to be taken fast and with all earnestness. Across the globe, the progress of society is judged on parameters that include ethics, concern for the commu-

nity and the level of civilisation. A country where female foeticide is as common as goddess worship can hardly claim to be evolved as a society.

When an illiterate woman, willfully or under coercion, agrees to the termination of her foetus, some kind of an explanation can be forwarded, for in her case extraneous factors have always ruled her life. It is worrisome when a modern, educated

Much of the effort should come from the women themselves who must learn to stand up for their conviction

woman tacitly agrees to the killings. It is beyond any logic and, therefore, even more sinister. Surveys have revealed the runaway success of clinics that have grown to the extent that they have become commonplace despite a ban. Couples through these clinics that not only reveal the sex of the unborn child, but also help beget a male foetus through various techniques.

Girls are primarily considered a liability. Theoretically, people are in favour of the discontinuance of dowry but in practice very few dare accept it as an operative fact. Indian woman today possesses political, social and vocational acumen and contributes to the family kitty. She rubs shoulders with men in all fields and is a competent Boeing pilot, a defence analyst, a cosmonaut and a scientist, among others. Yet her identity is undermined.

To focus on female foeticide as a cause of the declining sex ratio alone amounts to trivialising the issue. The need is to counter male-child preference and introduce role fluidity and sensitisation to the gender system. A complete metamorphosis of our antediluvian mindset is required. This can be brought about by educating and empowering women, encouraging people to let go of their grip on the traditional importance attached to a male child and creating awareness through access to information that percolates to the lowest common denominator. Much of the effort should come from the women themselves who must learn to stand up for their convictions and fight their own battles.

Policy-makers will have to enact laws that are even more stringent and regularly review them. Census to determine the sex ratio should be undertaken every five years to monitor this practice. Defaulting states should be made accountable. The introduction of innovative, result-oriented schemes by the Centre and the states for the welfare of the girl child, both in the short and long term, will act as a deterrent. The Shagun scheme by the Punjab government is a case in point. The Centre had considered sending congratulatory cards to couples blessed with daughters but the scheme never took off.

Female foeticide is symbolic of a world gone wrong. The figures are not only emotionally disturbing, but also socially alarming. In a scenario where protectors become killers, the very basic family unit is threatened. This is not the legacy we wish the coming generations to inherit.

Abortions a way of birth control in UP

From Subodh Ghildiyal

— DH News Service —

DECCAN HERALD

LUCKNOW, Aug 6

In contravention of established norms, Uttar Pradesh government has adopted Medical Termination of Pregnancy or abortions as a method of population control. The MTP cases are being shown in the trimestrial state performance report on family welfare alongside achieved various permanent methods of family planning (sterilisation) and spacing methods (Intra Uterine Devices, condoms and oral pills). The use of abortions as a method of birth control violates the MTP Act even as it is at the root of a shoot-up in Sex Determination Tests during pregnancy and mushrooming of abortion clinics in the state.

The latest trimestrial report of Department of Health and Family Welfare, obtained by *Deccan Herald*, shows that the government hospitals conducted 24,517 abortions between April and June. There is an increase in abortions as the figures for the same period during last year was 26,614. The report puts Lucknow division on top with 5544 abortions followed by 2,520 in Meerut division and 2,226 in Bareilly division. Alongside MTP are figures of Sterilisation (37,240 in

state) and IUD in tions (3,47,477) apart from users of condoms and oral pills with districtwise break-up.

Promulgated to check its misuse, the MTP Act holds as legal abortions in cases of pregnancies arising out of contraceptive failure or rape or posing health risk to women. But it is not a method of family planning and does not find mention in the Population Policy adopted by UP.

Confronted with the proof, a jittery administration flatly denied using abortions as a method of family control and sought to justify it "to rid couples of unwanted pregnancies." But it failed to provide a coherent answer to the mention of MTP in progress reports as an "achievement." Said Dr PC Kannaujia, Joint Director, Family Welfare, "We show MTP figures in our reports because they do indicate number of births controlled."

With government finding MTP as a useful method, abortion has turned into an industry. The rise in abortions is linked to sex determination of foetus among couples. "The male-female sex ratio in many states has dropped because of this practice and UP is not very far with 898 females per 1000 male," says Jashodhara, of SAHYOG, an NGO.

Tale of Taboos

THE TIMES OF INDIA, HYD

Her latest book, 'Stepping Out: Life and Sexuality in Rural India', is the culmination of a life-time of interest in women's issues. Celebrated author and the country's first woman editor of a national daily, Mrinal Pande spoke to Lalita Panicker about the myths that surround sexuality in India.

What is the biggest obstacle you faced while doing research for this book?

Official silence and a lack of official data. I had to get most of my information from NGOs. When the government talks of reproductive health and sexuality, it sees these issues only from the point of view of obstetrics and gynaecology. There is complete silence on the psychological state of women, and the traumas they face. The violence and sexual abuse that women regularly face goes largely unrecorded. We speak of fertility so much, yet there is no word on infertility which so many Indian women suffer from. Women have no understanding of their own bodies, although they need that to control fertility and maintain reproductive health.

What perceptions about sexuality did you encounter?

People speak so little about sexuality because they don't even have the language to do so. We wrote the *Kama Sutra* but when it comes to discussing sexuality, women do it in a roundabout manner. There is a complete reluctance to discuss matters like abortion. In fact, most women do not want to sound knowledgeable about sexuality since it is seen as a sign of immorality. There is also a deep mistrust of doctors when it comes to matters of sexuality. Contrary to popular perception, I found that men too are extremely shy of discussing matters related to sexuality.

Do you think women in rural areas want smaller families?

Yes, but the problem is that health functionaries are still stuck on targets and ugly sterilisation methods. Women are against terminal fertility control methods because of high infant mortality and also because it gives their husbands a reason to doubt their fidelity. Once the fear of pregnancy is removed, they feel, women will start seeing other men. Yet, women have no access to reversible methods of contraception — only 2 per cent of Indian men use condoms. In any case, most women are too scared to tell their husbands to use condoms.

How can we address the problem of maternity-related illnesses among rural women?

You have no idea how bad the situation is: There's both extreme lack of hygiene, resulting in recurring infections and lack of knowledge about these illnesses. I tell you the greatest pollution we have in India is

the pollution of silence and shame. Many women go through their reproductive years in great pain. I met women who had as many as eight children but had no clue about their bodies or how to look after themselves.

Did you find that women have a son preference on their own or are they coerced into it?

A son is sometimes a woman's only chance of acquiring a stake in the family property. In the absence of social security, she often sees him as insurance for old age. She also has the fear of losing her husband if she doesn't produce a son. If these conditions were not there, most women would perhaps opt for a girl child. But as things stand today, a woman has no choice at all.

Do you think more investment in health would help?

Yes it would, but the priority has to be on health insurance for the poor. The government, instead of beefing up the health sector, especially for women, is withdrawing and leaving the field to the private sector. The private sector in health is highly exploitative and does not always offer the best treatment. In fact, government funds go to the private sector in the form of subsidies in return for which it is meant to provide help to the poor. But have you ever seen that happening?

The poor are forced to go to the private sector where they are fleeced by quacks. Earlier, the government at least offered some health protection in the form of anti-malaria and TB programmes. All that public health now focuses on is tubectomies. We have been hearing about the cafe-

teria approach in reproductive health, but actually what we see is the ration card approach.

This would mean that illegal abortions are increasing.

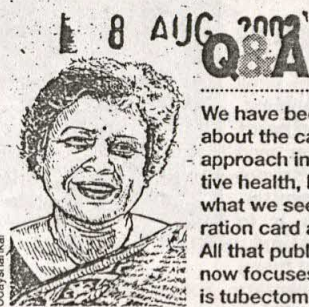
Yes. This is ironic because in India abortions are legal. It's the lack of healthcare access which forces women to undergo dangerous procedures at the hands of untrained people.

What then is the answer?

A healthcare system which is based on the needs of people and which is localised. Another issue which needs addressing is that our health departments are largely women-free zones. Above all, we need to discuss issues of sexuality and women's health openly. When the mighty are silent, the poor retreat even more.

In which direction should healthcare for women go?

We need to get away from this obsession that unless women are sterilised, the country is sitting on a ticking population time-bomb. We should not keep harping on the glories of our civilisation or how it once worshipped women when we cannot ensure basic dignity for them today.



We have been hearing about the cafeteria approach in reproductive health, but actually what we see is the ration card approach. All that public health now focuses on is tubectomies.

AIDS Alert

6 AUG 2003

Political Commitment as Antidote

THE TIMES OF INDIA

By Oscar Fernandes, Kirit Somaiya & Rajiv Ranjan Singh

Today for many politicians like us, HIV/AIDS is no more a distant problem. We have seen the virus strike people that we know, ordinary people like us. For instance, we have come across ordinary home-makers, most of the time living in purdah, being affected with HIV and the source was obviously their husbands. In another instance, the son of a very prominent social worker in Mumbai died of HIV/AIDS leaving behind a young wife and a three-month-old child. In Karnataka, we have come across young men who are sons of senior officials getting affected. Many young people from Udupi in Karnataka are migrating to Mumbai to work in restaurants and increasingly becoming vulnerable to the disease just as many others from different states are. In Maharashtra, HIV/AIDS has affected many lives and in particular of rural people. We have observed a sharp rise since the '80s in the percentage of young deaths in the total number of deaths in the state.

Thus, as the epidemic moves from the conventional high-risk groups to the general population, we have to understand the magnitude of the problem, which is that the virus is spreading faster than we imagined.

If the spread of HIV/AIDS is not checked and the problem reversed, it is likely to wipe out 20 years of development. Therefore, urgent action needs to be taken. This action need not be dramatic and we are not here to make tall promises. What we need to do is to impact reality on the ground.

Thus, the core group members of the Parliamentary Forum on HIV/AIDS are interested in motivating elected representatives across party lines. We have already mobilised 240 MPs and are hoping that this will filter down to the taluka level. As is evident, we want to bring together all the stakeholders and give this problem a unified thrust.

In India, we have seen political commitment to HIV/AIDS from the highest quarters. Prime minister Vajpayee declared HIV the most serious public health problem facing India. At the UN General Assembly Special Session on HIV/AIDS (New York, June 2001), the strength of the national commitment to the fight against HIV/AIDS was clearly demonstrated in the speech made by Sonia Gandhi, leader of the opposition. The chief ministers of high-prevalence states such as Maharashtra, Karnataka and Andhra Pradesh have joined forces to address this issue and are personally involved in the state response to the epidemic.

In Karnataka, we contributed Rs 10 lakh for setting up a private blood bank. It was a very small contribution as the funds came from other sources also. While inaugurating the blood bank, the governor commended the fact that the MP concerned has used his area

development fund for HIV/AIDS prevention, care and support. In Maharashtra and Bihar too, similar initiatives have been taken.

Thus, the first National Convention of the Parliamentary Forum on HIV/AIDS was held recently in New Delhi. Elected representatives comprising MPs, MLAs, MLCs, mayors and zila parishad/panchayat chairpersons participated in this convention. At least 1,000 elected representatives from different parts of the country attended the convention organised in collaboration with the ministry of health and family welfare, National AIDS Control Organisation and UNAIDS.

The core group for the forum consists of political leaders from all major national and regional political parties. This show of political will has become possible because all of us now recognise the gravity of the problem. We have overcome the earlier denial and ostrich-like attitude. Today, we realise that the best preventive strategy would be to accept that the problem exists, confront it and ensure that the rights of people affected by the virus are safeguarded.

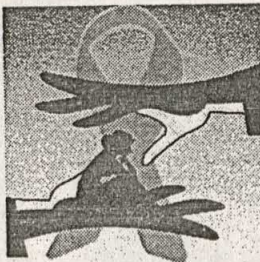
Political leadership in combating HIV/AIDS was the theme of this all-party meeting. Political leadership from all levels and cutting across party lines came together to chart out strategies for HIV/AIDS prevention and care. The main aim of the convention was to mobilise elected representatives. We hope to increase the number of MPs actively working on this issue from the current 200 or so. We also hope that the state legislative forum on HIV/AIDS, formed in six states, can be extended to

least 16 states by the end of the year. The Parliamentary Forum feels that although the HIV/AIDS prevention programme is professionally managed by NACO and its state counterpart, it is essential that the country's political leadership lend its full support to this issue. One of the ways in which elected representatives could contribute is to allocate the funds from special schemes such as the Member of Parliament Local Area Development Scheme (MPLADS) towards supporting local initiatives on HIV/AIDS.

There is overwhelming evidence that if the AIDS epidemic needs to be controlled, the governments—Centre and states—have to make it a priority. Investing in an effective AIDS response will pay off. Failing to do so will undermine every other development goal.

What strikes us as most critical at this juncture is the need to strengthen institutional responses to prevent mother-to-child transmission of HIV/AIDS. It is equally imperative that along with being able to prevent the transmission from mother-to-child, the concerns of the mother should be addressed.

(Convenors of the Parliamentary Forum on HIV/AIDS, the authors belong to the Congress, BJP and Samata Party respectively.)



Antibody could lead to HIV vaccine

Researchers have figured out how a rare antibody sees past the disguises of the AIDS virus, a finding that may lead to a vaccine that will finally work against the killer microbe. The antibody, taken from a unusual patient whose body can resist the virus, recognizes and attacks the human immunodeficiency virus, unlike most of the body's defenses.

"Nothing like this has ever been seen before," says Ian Wilson of The Scripps Research Institute in La Jolla, Calif., who led the research. AIDS has killed 25 million people around the world and is projected to kill 80 million by 2010. The only real hope of fighting the incurable virus is a vaccine, but efforts so far have flopped although dozens of vaccines are being tested.

Antibodies are an important arm of the body's defenses against germs. They are usually able to recognize an invader by structures on its surface, called antigens, and can either call in help, or neutralize it themselves by pasting themselves against it. Most vaccines in use today stimulate the production of neutralizing antibodies.

The human body makes plenty of antibodies against HIV, but the virus disguises itself with human sugars. One antibody seems to be able to see past this ruse. Called 2G12, it was found by Austrian researchers a decade ago in a patient who seemed to resist acquired immune deficiency syndrome — the condition caused as HIV destroys the immune system over time.

Antibody's Special Structure

Writing in the journal *Science*, Wilson and colleagues said they had figured out how 2G12 does it. It recognizes that while HIV is covered up with human sugars, they are not arranged in a human-like way. The antibody does this with a special structure of its own, which Wilson and

colleagues, including a team at Oxford University in Britain, have crystallized and imaged. "The Fab (antigen recognition) arms are interlocked," said Scripps researcher Dennis Burton, who worked on the study. "That is a unique arrangement, and it is good for recognizing a cluster of shapes like sugars on a virus."

Now what needs to be done is to use the structure of the antibody as a template or model to design an antigen to stimulate the production of 2G12 or another antibody that will neutralize HIV, the researchers said. The approach might also work for making vaccines against other germs, said Wilson. "Can we now use this to engineer antibodies with higher affinity against other antigens or clusters of antigens?" he asks.

Calcium Pills: Some Fail Quality Tests

If you take fancy calcium pills, please check the label. Some best-selling calcium supplements in the global market have failed quality testing at a consumer laboratory in the USA.

"Many calcium supplements are fine," says Todd Cooperman, MD, president of ConsumerLab.com., USA. "But with a few, people aren't getting what they expect to get." In fact, an expensive "coral calcium" supplement contained excess amounts of lead, Cooperman's tests showed. It's another strike against coral calcium, whose advertisements have drawn considerable criticism.

Calcium comes in various formulations, none of which are regulated by the FDA, of USA government, because they are dietary supplements:

- Calcium carbonate - the most common and least expensive - comes from oyster shells and is absorbed best when taken with a meal.

THE NEW INDIAN EXPRESS

APSACS to adopt new approach

to check AIDS

21 AUG 2003

Express News Service

Hyderabad, Aug 20

THE Andhra Pradesh State Aids Control Society (APSACS) has decided to organise sustained leadership development programmes with the assistance of United Nations Development Programme (UNDP) to check the spread of AIDS.

The programme will be held in November. Under the programme, training will be imparted to various stake-holders, including non-governmental organisations, health institutions and other Government bodies working in this field.

At a workshop organised by APSACS on "HIV/AIDS leadership for results in Andhra Pradesh", it was emphasised that AIDS could no longer be tackled by a traditional approach. A more systematic and professional approach is required. Various new tools and methodologies would be incorporated in the programmes to check AIDS.

APSACS project director Damayanti explained the importance of the workshop. She said that it would help seek enrollments and nominations from various stake-holders in the AIDS awareness campaign. "The capacity building of various organisations will be given importance," she added.

UNDP's international consultant Allan Henderson, in his presentation, said the workshops would focus on leadership management and its effectiveness to check the spread of the disease.

UNDP regional HIV and Developmental Programme for South and Northeast Asia coordinator Jonam Yangchen gave a presentation on "Leadership for Results: A new Vision".

She pointed out that countries like Cambodia and Thailand were able to arrest the increasing number of AIDS cases with the help of such programmes.

Imbeki does a U-turn on treatment for HIV/AIDS

JOHANNESBURG, AUG. 10. The South African President, Thabo Mbeki, has finally bowed to mounting public pressure and reversed his Government's controversial policy on treating AIDS.

Mr. Mbeki, who has previously denied that a link exists between HIV and AIDS, has ordered his Department of Health to draw up plans detailing when and how anti-retroviral drugs will be made available to half a million infected South

Africans. The news was welcomed by campaigners and patients who said Mr. Mbeki's U-turn was long overdue but that they had been let down before.

With crucial national elections only months away, however, Mr. Mbeki could risk losses at the polls if he fails now to act.

Specialists from the Clinton Foundation AIDS Initiative, set up by the former U.S. President, Bill Clinton, will help to draw up the plan, along with South African experts. Zackie Achmat, chairman of the Treatment Ac-

tion Campaign, which has waged a civil disobedience campaign against the Government, congratulated Mr. Mbeki on his decision, saying it was the best news in four dark years. "We will wait to see the actual

South Africa's response to a disease seen as a growing threat to economic and social stability. Some sufferers remain sceptical. Last night Rose Thamea, who has been infected with HIV for 10 years, said she would not

Caveats

Though the President has asked that the plans be drawn up within weeks, the announcement came with carefully worded caveats that "if and when" a decision was made to introduce a national drug programme, it could take up to nine months for the medication to reach the estimated 500,000 South Africans who need it.

The announcement said the questions remained about the implementation of such a programme, including the availability of the drugs, whether the country could afford them, and whether it could develop a

came after a special meeting of the Cabinet to discuss AIDS.

treatment. "Government shares the impatience of many South Africans on the need to strengthen the nation's armory in the fight against AIDS," the statement said. "Cabinet will therefore ensure that the re-

remaining challenges are addressed with urgency and that the final product guarantees a programme that is effective and sustainable."

Mr. Mbeki has repeatedly questioned western scientific wisdom on HIV/Aids. His

Health Minister, Manto Tshabalala-Msimang, recently proposed treating HIV/AIDS with traditional medicines. As a result, anti-retrovirals — the only known effective drugs — have been available almost exclusively to those who can afford private treatment.

The abrupt U-turn came after a week of mounting pressure from scientists, community workers and academics at the South African AIDS conference

n Durban. — ©Telegraph
Group Limited, London, 2003



A protester holds up a poster during a march to the International Convention Centre where the South African Government was holding a National AIDS conference last week. — AFP

Over 4m HIV/AIDS infected people in India

THE ASSAM TRIBUNE

12 6 JUL 2003

NEW DELHI, July 25 — Painting a grim picture ahead of a national convention on AIDS, new official data released today said the number of HIV/AIDS infected people in the country is in the range of 3.82 to 4.58 million and transmission of the AIDS virus through sexual route and from mother to child has increased 'slightly', reports PTI.

Announcing a new policy retaining the figures in the form of range of HIV-infected people rather than giving point figures, national AIDS control organisation today said the new figures were derived from the sentinel surveillance of HIV/AIDS carried out last year.

Prime Minister Atal Behari Vajpayee will inaugurate the two-

day first-ever national parliamentary convention on HIV/AIDS tomorrow. It is being attended by over a thousand political leaders from across the country.

The official figure of infected people released last year was 3.97 million with the range being 3.31 million to 3.97 million.

'Of the infected people, 61.5 per cent are males and 38.5 per cent females', Meenakshi Datta, Ghosh, project director, NACO told reporters here.

However, denying that prevalence has crossed one per cent mark as per the new figures, Ghosh said that the range given was inclusive of 20 per cent make up to allow for any deficiency in data collection.

The figures have been given on the basis of prevalence of HIV/AIDS in the adult population in the age group of 15 to 49 years, she said maintaining the prevalence was still 0.8 per cent.

Ghosh said the new data showed a fall in HIV/AIDS transmission through contaminated blood and injectable drug use. However, there was a small increase in transmission through sexual route and perinatal route (mother to child). While 76.8 per cent of the infected people are urban, 23.2 per cent are rural, she said.

Stating that HIV/AIDS was no longer a medical or public health problem, but a problem of human rights, Ghosh said 'we need

a collective response to tackle this.'

Efforts from various sectors such as civil society, NGOs public and private sector and faith leaders are needed in this endeavour, she said.

Reacting to a projection last year by a US intelligence agency that about 25 million people would be infected by HIV/AIDS by 2010, Ghosh said 'we are not aware of what data was used by that agency.'

NACO had asked for details of the procedure followed by that agency and was told that the figure was based on the consensus by experts, she said. 'But we were not told of who these experts were'. 'There is no major upsurge in the country,' she said.

PM calls for effective response to AIDS

INDIAN EXPRESS, MADURAI

New Delhi, July 26 : Amid the UN warning that India must act to avoid an AIDS catastrophe, Prime Minister Atal Behari Vajpayee today said the situation demanded an "effective and undelayed response" with political parties requiring to pay far greater attention to issues of health care than they do now.

Admitting that India's response to the epidemic, affecting nearly four million Indian men, women and children had been "somewhat belated", Vajpayee said, "HIV/AIDS is not only a grave global challenge, it is also a national concern, one that demands effective and undelayed response."

Opening a two-day national convention of parliamentary forum on HIV/AIDS, the Prime Minister lamented that public health issues were not finding their place on the political agenda in the country and said it needed to be reversed.

"In India, issues pertaining to public health do not normally find a place on the nation's polit-



Congress president Sonia Gandhi lighting a lamp while Prime Minister Atal Behari Vajpayee looks on at the inauguration of a national convention on AIDS in New Delhi on Saturday - PTI

ical agenda. This is not so in other democracies where, sometimes, even elections are won or lost on the basis of health issues," he said.

Speaking on the occasion, Congress president Sonia Gandhi hit out at the government for "very slow" progress in the health insurance cover to the

people and said this was one of the conditions on which her party had extended support for the liberalisation of the insurance industry.

"The coverage of health insurance must expand significantly - indeed this was one of the conditions on which I had extended the support of the Congress

party to the liberalisation of the insurance industry four years ago. But unfortunately progress has been very slow," she said.

Stating that over one-fourth of spending on health in the country was by individuals, she said in other countries, the proportion of public investment in health was significantly higher.

"We must move in this direction quickly."

Expressing a "few special concerns", Sonia said that the country could not overlook or accord any less importance to the risk of HIV/AIDS through injectible drug use.

This was of particular significance in the North-East which was somehow not getting adequate focus, she said.

She said it was "paradoxical" that while Indian companies were world leaders in the manufacture of anti-aids drugs and were supplying such drugs to many other countries, India did not have drug therapy as part of her AIDS control programme.

• PTI

Positive Power

13 JUL 2003

THE TIMES OF INDIA

When she tested positive for the HIV virus in 1995, P Kausalya was an ordinary housewife. In the eight years since, her courage, organisational skills and determination to break the silence on HIV/AIDS has made her an icon for those living with the dreaded virus. In the Capital recently to attend a meeting of the parliamentary forum on HIV/AIDS, the president of the Positive Women's Network in Chennai spoke to Lalita Panicker:

How did you contract HIV, and how did you and your family deal with the knowledge?

My husband was HIV positive when I married him. But he did not tell me about it. Shortly after marriage, I had a stomach problem and, on testing, found I was HIV positive. I had studied nursing in class 12 so I knew about HIV, that it was a deadly disease. The doctor didn't reveal the news to me but to my cousin who had accompanied me in his car. After this, my cousin took me to the bus stop and told me to take a bus home. A friend, who knew my status, stood by me, but my own father and family did not. My uncle's family, however, supported me.

Did you try and get treatment?

My uncle took me to Madras where a quack offered a cure for Rs 200 a day. My husband, who died later, deserted me. I started learning all I could about HIV/AIDS. I gathered the courage to approach the police, to try and get my dowry back from my husband's family and also to get my share of my father's property. But, despite my best efforts, I failed.

What made you

come out in the open with your status?

I wanted to give courage and hope to people, like myself, who face stigma and discrimination. I was determined not to let the virus beat me. I forced myself to overcome fear and think positively. I began to think of how I could work effectively to better the lot of women like me, and that is how I have ended up as president of the Network. Also, I didn't shy away from interacting with the media and talking about the issues which concern those with HIV.

What can be done to generate greater awareness about the virus?

Information about HIV must be widely disseminated in schools. As for the media, it must avoid sensationalising the issue as it did when it published a report about an HIV positive woman being stoned to death.

Do you think government policy as it stands today is effective?

The government policy focuses only on prevention. But with four million HIV positive people in India, we also have to address the issue of care. I am fortunate in that I can afford to buy anti-retroviral

drugs worth Rs 2,400 every month. I have money from my salary as president of the Positive Women's Network.

Is the medical fraternity adequately sensitised on the needs of those living with HIV?

Most doctors don't know much about opportunistic infections that come with HIV. In most government hospitals, the staff regard HIV positive people as immoral and speak to them in a harsh and vulgar manner... As for AIDS vaccine trials, they have failed in other countries.

Critics allege that too much is being made of HIV when India faces enormous challenges from diseases like malaria and TB.

Remember, HIV has no cure at all. It has to be taken far more seriously.

Do you think attitude towards people with HIV is changing for the better?

Yes, but only in high-prevalence states like Tamil Nadu. In our centres, for instance, the counsellors themselves are HIV positive people. So, they are able to comfort the positive people who come there.

Are there any particular problems that women with HIV face?

There is far greater discrimination against them. Socially, they are shunned as immoral. Economically, they have far less access to medication.

What are the key issues that need to be addressed now?

One, to ensure that HIV positive people get treatment. At present, the attitude is: 'Why waste money on treatment when the person is going to die anyway?' There must be changes in legislation to see that a positive person is not denied her property, as happened in my case. Another issue is that pregnant positive women only get treatment for the duration of the pregnancy. The idea being to prevent mother to child transmission. There is little concern about the post-pregnancy stage.

And, as I said before, in many cases the media hype has worked against us. Take the case of the two HIV positive children in Kerala. Before the news of these two children in a Kerala school came out, things were not too bad. But once the media got on to the story, with many reporters laying siege to the school, the mood changed, with parents insisting that they wouldn't send their children to school if these two stayed on, etc. Indeed, the story had a domino effect, with many other schools with HIV positive children facing a similarly hostile response from parents and teachers.

What about political commitment, do you see any change there?

Yes, there is greater acceptance that the pandemic has to be dealt with. More politicians are now willing to speak on the issue. Of course, all this has to translate itself into action, but that will take time.



Lalita Panicker

Rise in AIDS cases worries PM

NEW DELHI, July 26 — Expressing serious concern over the prevalence of a large number of people afflicted with the dreaded HIV/AIDS disease, Prime Minister Atal Behari Vajpayee today lamented that public health issues are not finding their place on the political agenda in the country which should be reversed, reports PTI.

"In India, issues pertaining to public health do not normally find a place on the nation's political agenda. This is not so in other democracies where, sometimes, even elections are won or lost on the basis of health issues," he told top political leaders gathered at the inauguration

of a two-day National Convention of Parliamentary Forum on HIV/AIDS here.

Noting that over four million Indian men, women and children out of a total of seven million newly-infected adults and children across Asia and Pacific live with the virus, Vajpayee said in some States HIV prevalence has reached over one per cent among women attending antenatal clinics.

"It is obvious that political parties in our country need to pay far greater attention to issue of healthcare than they do now," he told a galaxy of political leaders which included Lok Sabha Speaker Manohar Joshi, Con-

gress president Sonia Gandhi, several chief ministers, union ministers, MPs, State legislators and diplomats.

Maintaining that HIV/AIDS was not only a grave global challenge, he said it was equally a national concern, one that demanded effective and undelayed response.

Vajpayee said as a matter of fact even today other entrenched challenges in the health sector like malnutrition, lack of clean drinking water, poor sanitation conditions and environmental degradation did not attract as much attention of political establishment as HIV/AIDS.

He said the growing parlia-

mentary activism on HIV/AIDS was welcome as it not only helps fight against the epidemic but hopefully would also make elected representatives more sensitive to other public health challenges.

Though the country's response to the epidemic has been 'what belated' he said it was gaining in strength with each passing month.

Emphasising the need to have openness and complete absence of prejudice towards affected persons, Vajpayee said experience of AIDS control in other countries has shown that education was crucial to the success of the struggle.

30 AUG 2003

Survey warns of rise in HIV+ cases

25 AUG 2003

PIONEER

Yoga Rangtia

New Delhi

INDIA MAY not be a ticking time bomb for HIV/AIDS as Western experts would have had us believe a couple of years ago. But the latest round of sentinel survey warns of rise in HIV positive cases in certain pockets in low prevalence States, largely transmitted via sexual mode.

The example is that of Northeast, where the sexual mode of transmission of the virus has risen this year while that due to needle sharing by drug-users has declined. Earlier, the typical problem in curbing HIV infection in the region was one of drug-users shared intravenous needles. But now the survey shows an increase in the number of people testing positive at clinics treating sexually transmitted diseases (STD), when compared with the previous years. In Manipur, for instance, 10 per cent of people who visited STD clinic tested positive.

Another case is of Rajasthan, which is an HIV low prevalence State. Even as the general population is still not affected by the epidemic,

there is a steady rise in positive cases at STD clinic. In the last couple of years, positive cases at STD clinics in Jaipur and Udaipur have risen to around 20 per cent.

Uttar Pradesh also has seen rise in positive cases in STD clinics in 2002 by 1.8 per cent over the previous year. In Bihar, Raxaul is a known HIV/AIDS hotspot. "The rise in number of positive cases in densely-populated State is a cause of worry. The typical pattern of HIV spread is from commercial sex worker, to 'bridge population' of industrial migrants and truckers, to women in rural areas. Compounding the problem is the poor awareness among rural women about prevention of the disease, lending them vulnerable to infection. And because of sheer population density, there is danger of a flare-up," said Dr M Bhattacharya of National Institute of Health and Family Welfare.

The only State that is bucking the trend is West Bengal where the number of positive cases in STD clinics is not rising. Tamil Nadu, after seeing a steep rise in the early years of the infection, has now successfully curbed the ascent by

effective intervention. Andhra Pradesh, which is a high prevalent State, is also reporting increase in positive cases in STD clinics. In Hyderabad, the percentage has jumped to 40 per cent positive cases reported from STD clinics. In Guntoor and Kakinada districts, five per cent of general population is estimated to be infected. In Maharashtra, another high prevalent State, is still showing an ascent in number of cases from STD clinics.

"We are not sitting on a volcano. But we cannot be complacent now. There's a need for mapping each State for pattern of sexual activity," Dr Bhattacharya said.

There is some murmur in the official quarters that promoting condoms promotes promiscuity and hence the advocacy for HIV prevention should dwell on abstinence and fidelity. This is an ideal case scenario. But the numerous towns of India are telling a different pattern of sexual activity. Till the ideal scenario evolves in the society as wished by some, the Government, there might merit in promoting the use of condom, it is felt.

India as a Knowledge Society

Dr. K. Venkatasubramanian

The nation is on the brink of a period of profound change. All that we do, all that we make, and all that we earn, will be altered by new knowledge and technological change. Knowledge differs from other resources—each new discovery provides a platform for further discoveries.

TODAY, thanks to our eminent Rashtrapati H. E. Dr. A. P.J. Abdul Kalam who is himself a global Knowledge worker, every Indian has begun to think of his future in Knowledge terms. India was a Knowledge Superpower in the days of Rig Veda 5000 Years ago. China even learnt its first alphabets from here including. Similarly Egypt. Even today Mathematics is called Hindstat—an art from India.

A five point agenda for India's Development as Super Knowledge Society was unveiled by Hon'ble Prime Minister of India, Shri Atal Bihari Vajpayee comprising of the following :

- Education for developing a learning society
- Global networking
- Vibrant Government-Industry-Academia interaction in policy making and implementation
- Leveraging of existing competencies in IT, Telecom, Bio-technology, Drug Design, Financial Services, and Enterprise or Management
- Economic and business strategic alliances built on

capabilities and opportunities

It is felt that only such an agenda will help leveraging of existing competencies in Information technology, telecom, bio-technology, drug design, financial services and enterprise wide management to make India a knowledge super power.

Experts had predicted a few years ago that this millennium will belong to two big super powers in this region of Asia and India is one of them.

Some principal features of the knowledge society include :

- Knowledge and information being major sources of creating value
- Rapid changes in technology
- Greater investment in research and development
- Greater use of communication and information technology
- Growth of knowledge-intensive business
- Increased networking and working together
- Rising skill requirements

This contrasts to earlier societies such as the agricultural society (when agriculture was the key to survival) and the industrial society (when mass production of goods generated most of the wealth).

Knowledge the Key

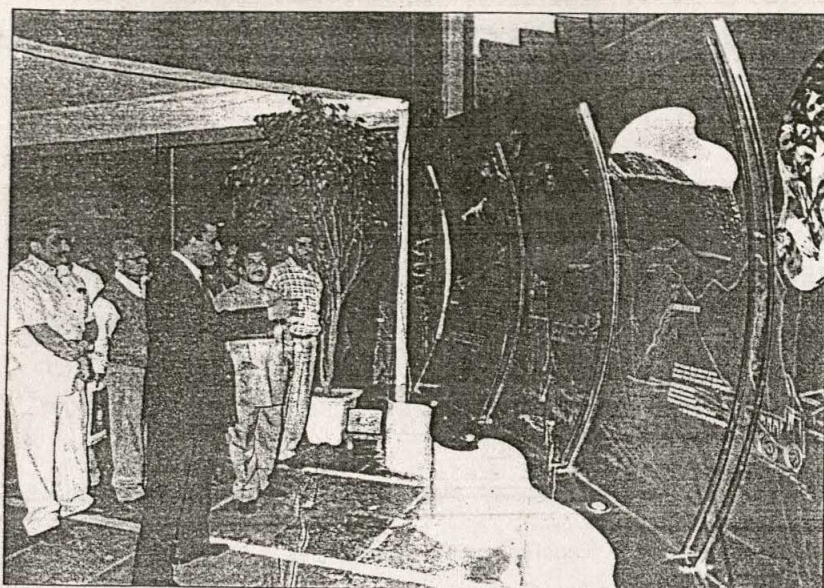
In the emerging knowledge society, more than land, labour and capital, knowledge alone will be the key factor to creating wealth and improving the quality of life.

The idea of the knowledge society has been spreading rapidly around the world. So much so, that it has been described as a "Knowledge Revolution".

The key factors driving this revolution are as follows :

- Globalisation of the world's economies has fuelled competition and spurred the gathering of knowledge to get ahead.
- The technologies for gaining, sharing and applying knowledge are changing rapidly—for example the rise of computers and the internet.
- The role of research, science and technology in creating

Dr. K Venkatasubramanian, is Member, Planning Commission.



New Horizon

knowledge to solve business, social and environmental problems is growing.

- Knowledge tends to grow at exponential rate. Whereas the resources of the industrial society, for example, fossil fuels, can be used once, existing knowledge can be used to create new knowledge. This speeds up the rate at which knowledge is created and grows.

Concepts

- Knowledge—a useful definition is—familiarity gained by research and experience. It can include 'know what' (knowledge about facts), 'know why' (scientific knowledge of the principles and laws of nature), 'know how' (skill or capability to do something), 'know-who' (information about who knows what and how to do what).
- Knowledge Economy—the economy at the core of a knowledge society, i.e. an economy which revolves around creating, sharing and

using knowledge and information to create wealth and improve quality of life.

- Knowledge Worker—a person who provides value by generating, sharing or applying ideas. It can equally apply to an eminent scientist, a skilled craftsman or a receptionist with an expert knowledge of who's who in the organization and where all the useful information is available.

- Knowledge Management—As knowledge becomes more valuable, there is a growing need to manage it effectively to capture its full benefit. Hence the rise of this important sub-category of general management.

The nation is on the brink of a period of profound change. All that we do, all that we make, and all that we earn, will be altered by new knowledge and technological change. Knowledge differs from other resources—each new discovery provides a platform for further discoveries.

There is an urgent need for a timebound project focussing on exploiting knowledge for our future prosperity and well being, and our development as a knowledge society. Rather than projecting into the future with assumptions about how today works, the project should involve constructing a vision of a most desirable future, and then identify strategies to reach there.

The project should provide a framework for thinking about the sort of future India wants, and define the context for the Government's research, science and technology investments to make India a super power in the new millennium and a super knowledge society. Government of India invests substantially in research, science and technology to generate new and innovative economic, environmental and social capacity. In this way, the Government underpins innovation throughout all sectors. However, it cannot work in isolation, and innovation must be focussed on the needs of end-users whose lives, environment and enterprise will be affected by new knowledge and technological change.

The Government needs to be infused with confidence that its research, science and technology investments will be rapidly and effectively exploited to make India a knowledge society. This is more likely where sectors demonstrate their strategic thinking about the future, through bold and dynamic innovation strategies and Government is ready to be a partner in them.

Direction—Setting

The Government's Science and Technology Departments can think of 'Science Envelope Goals' covering Innovation, Economics, Environment and Social Science, which are all inter-related, for

making India a Knowledge Society. This is necessary because of the long-term nature of many S&T activities. The goals may include planning and strategy to:

- Provide a uniform set of directions across the science envelope, enabling elements of work, carried out under different sources of funding, to be combined in coherent research portfolios; and
- Act as an anchor point for the performance expectations designed to assess the efficacy of investments in S&T.

Goals

We have clear cut goals in a Knowledge Society.

1. Innovation Goal :- Accelerate knowledge creation and development of human capital, social capital, learning systems and networks in order to enhance India's capacity to innovate.

The first goal recognises the importance of building a culture of innovation in India to underpin all other economic, environmental and social outcomes. Science and Technology should generate new knowledge, help develop human and network capacities, and stimulate an entrepreneurial culture so that India can be a full participant of the global knowledge age.

This goal links directly to the Government's aspirations to create an enterprise economy and to value innovation. It reinforces the Government's strategic priority on expanding the country's knowledge base and technological capabilities.

2. Economic Goal :- Increase the contribution knowledge makes to the creation and value of new and improved products, processes, systems and services in order to

enhance the competitiveness of Indian enterprises.

This second goal stresses the importance of new knowledge and technological change as a driver for value-creation, innovation, and productivity gains across the economy. It identifies the contribution that knowledge

"A developed India by 2020, or even earlier, is not a dream. It need not even be a mere vision in the minds of many Indians. It is a mission we can all take up-and succeed."

makes to economic competitiveness. It provides a context for Government investment in key areas consistent with the policy that investment should generate widespread net benefits over time, without displacing or otherwise creating disincentives for investment by others.

3. Environmental Goal :- Increase knowledge of the environment and of the biological, physical, social, economic and cultural factors that affect it, in order to establish and maintain a healthy environment that sustains nature and people.

The third goal emphasises how knowledge of environment and processes underpins our ability to improve environmental quality and integrity. It picks up ideas related to India's environmental concern, expressed in Government's strategic priority on biodiversity.

4. Social Goal :- This should lead to uplift of the poor and alleviation of poverty.

Increased knowledge of the social, biological, environmental, cultural, economic and physical determinants of well-being in order to build a society in which we Indians can enjoy health and independence and have a sense of belonging, identify and partnership.

This is perhaps the most important Goal as Knowledge Explosion should try to take the poor majority to decent living levels and ultimately we must work towards abolition of the "Poverty Line"

These four goals strongly influence investment decisions and also provide a context for departmental research, including long-term, cross-portfolio, and applied social science research.

Framework

In order to make India a "Knowledge-Centered Society", there is need for a detailed framework, which will consist of lot of sub sets and focus on areas of strategies, resource generation, economic indicators, etc. Such a framework for a nationwide network knowledge management has been developed by the President of India H.E. Dr. A.P.J. Abdul Kalam.

SWOT Analysis

According to Dr. A.P.J. Abdul Kalam, nation's long term economic and security objectives evolved through SWOT (Strength, Weakness, Opportunity and Threat) analysis provide the basis for this framework and help to identify different knowledge areas and priorities for knowledge creation and exploitation.

A knowledge society must be inclusive, and for that inclusion to

be a reality, everyone must have access to participation in the decision-making process. The information and communication infrastructure provides the means because it allows for timely, inexpensive and broad dissemination of information from a multiplicity of sources, to the majority of people. It also allows for immediate assessment and internationalization of information that is provided, because of its built-in capacity for interactivity. At the moment, that capacity for interactivity, i.e., the ability to access and exchange information is not universal. For the principle of universality of access to be

applied in a way that moves us towards a "knowledge society and economy", the concept of access must be expanded to include "interactive and inclusive participation".

This article mainly emphasises the issues involved in making India a Knowledge Society, which is the need of the hour.

India leads the developing world in Knowledge database and even developed nations, like the USA, are looking towards us for their software requirements. Bill Clinton, former President of United States of America went on

record in India that if he had any urgent software needs, he will first approach India.

We have thus everything to make India a Knowledge Super Power.

Only we should act at once.

As stated already, India was a Knowledge Force in the ancient days. Let us restore this status to Bharat today. Towards this end, the implementation of the Five Point Agenda of the Prime Minister is very essential.

Let me quote Bharat Ratna. H.E. Dr. A.P.J. Abdul Kalam, the President of India from his "Vision-2020"

Glimpses of Past Glory

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Nutritional Well-Being and Gender Differences

After 30 Years of Rapid Growth in Rural Punjab

How much difference does economic growth make to the nutritional well-being of young children? What effect does it have on traditional child care practices, and specifically on the tendency to favour male children? A follow-up 30 years after a classic study carried out in 1971 in Punjab villages indicates changes that are dramatic, but also that rapid economic growth, while necessary, may not have been sufficient.

F JAMES LEVINSON, SUCHETA MEHRA,
DOROTHY LEVINSON, ANITA KUMARI
CHAUHAN, ASTIER M ALMEDOM

How much difference does economic growth make to the nutritional well-being of young children? What effect does it have on traditional child care practices, and specifically on the tendency in parts of India to favour male children? These were some of the questions which prompted a follow-up study 30 years after a classic study carried out in 1971 in Punjab villages. The follow-up study indicates changes that are dramatic, but also indicates that rapid economic growth, while necessary, may not have been sufficient.

In 1971, the first author, in collaboration with the government of India Food and Nutrition Board, carried out a study of the causes of malnutrition among children aged 6 to 24 months in 18 villages surrounding the market town of Morinda in Rupnagar (formerly Ropar) district in Punjab. That study which identified important behavioural and economic determinants also found substantial malnutrition (47.8 per cent moderate and severe malnutrition), and the most extreme gender disparity in nutritional status ever recorded in an Indian study (87.5 per cent of severely malnourished children were girls).

Since 1971, Punjab has, of course, experienced remarkable agricultural development plus major increases in rural electricity and road construction. Incomes in the study area relative to the cost of

living more than doubled over this 30-year period, but, importantly, they doubled both among the traditionally landowning jats and the traditionally landless ramdasias.

The 2001 study, undertaken 30 years later, was designed to assess changes in nutritional status, mortality, gender discrimination and malnutrition causality which have taken place over this period of rapid economic growth.

After recalculating the 2001 data according to the originally used standards for comparability, the nutritional status of children from the two surveys could be compared. These results are presented in Table 1. As seen, the prevalence of malnutrition (moderate plus severe) decreased dramatically, from 47.8 per cent in 1971 to 14.9 per cent 30 years later. Severe malnutrition fell from 8.3 per cent to 0.5 per cent, and the percentage of 'normal' children more than doubled over the 30-year period. Remarkably, among the jat children, malnutrition prevalence fell from 38.8 per cent to 2 per cent, while among the poorer ramdasia children, malnutrition was reduced by a still impressive 66 per cent.

Table 2 compares malnutrition prevalence by gender. As seen, moderate plus severe malnutrition among girls decreased by 75 per cent, from 68.6 per cent in 1971 to 17.5 per cent in 2001, and the gender disparity, so great in the earlier survey, closed considerably.

These changes in nutritional status are consistent with the reduced child mortality reflected in Table 3. As indicated on the right side of that table, the average number of live born dead siblings of children studied decreased eightfold, from 0.64 (meaning, on average, more than one dead sibling for every two children studied) in 1971 to 0.08 in 2001.

These changes, by any measure, are dramatic indeed. How did this happen? What factors precipitated such a change. The left side of Table 3 highlights, at the outset, an important causal factor in this improved well-being, the reduction in family size. In 1971, the average child studied had 2.22 live siblings. Thirty years later, the figure was less than 1 (0.93).

Other study results are summarised in Table 4. As seen, literacy of mothers increased nearly fourfold over the 30-year period (from 22.6 per cent to 84.8 per cent), while the earlier belief that severe malnutrition is caused by the casting of a shadow of an evil person or spirit, prevalent among 55.8 per cent of mothers in 1971, was non-existent 30 years later. In an area where the introduction of complementary food (feeding of solids along with breast milk) is traditionally delayed, the average age of introduction dropped from 10.6 months of age to 7.2 months.

Using the same index of diarrheal frequency and severity in both studies, the

Table 2: Prevalence of Malnutrition by Gender (Per cent)

	1971		2001	
	Male	Female	Male	Female
Moderate	32.1	54.2	11.0	17.4
Severe	2.8	14.4	0.0	0.1

Table 1: Comparison of Nutritional Status 1971 and 2001 Using Harvard Standards and the Gomez Classification (Weight for Age)

Group	Normal		Mild Malnutrition		Moderate Malnutrition		Severe Malnutrition	
	(Per Cent)		(Per Cent)		(Per Cent)		(Per Cent)	
	1971	2001	1971	2001	1971	2001	1971	2001
Jats	19.6	48.0	41.6	50.0	35.2	2.0	3.6	0.0
Ramdasias	6.9	26.4	35.8	54.0	45.1	18.4	12.3	1.1
Other	20.8	29.2	31.3	52.3	37.5	18.5	10.4	0.0
Total	14.8	32.7	37.3	52.5	39.5	14.4	8.3	0.5

average 2001 score was less than half that found in 1971. Immunisations and safe water supply, sporadic in 1971, were universal among this population in 2001. Real income (in constant rupees) increased over the 30-year period, 2.2 times among jats, and 2.16 times among ramdasias.

The improvements observed over the 30-year period in nutritional status among these young children and the marked reduction in gender disparity – with malnutrition among young girls falling to a quarter of earlier levels – are laudable. Even in Punjab, among India's most developed states, malnutrition prevalence in 1971 was high on a spectrum of developing countries. In 2001, by contrast, the figures for this population are comparable to those found in such semi-industrialised countries as Mexico and Turkey, while among the jats, nutritional status is comparable to that found in Russia.

The analysis, however, suggests that such improvements do not accrue automatically from rapid development. What made the difference in Punjab is that the development process was highly participatory (rarely the case, for example, in Latin America or west Asia) and that it was accompanied by the broad-based provision of educational, health and family planning services. Importantly, the fourfold increases in the literacy of young mothers and universal access to safe water and immunisations have protected the large majority of this population of children against serious nutrition and health problems.

The reduction in gender disparity owes much to the highly significant reductions in the total number of children in these young families (from 3.2 to 1.9). With a much higher proportion of young children surviving and an aggressive family planning programme, young couples clearly have found it to their advantage to have

smaller families. With smaller families, a much smaller number of less desired female children, and incomes adequate to support female as well as male children, young girls are now fed better and kept healthier.

These understandings were further reinforced by questions asked both to mothers and grandmothers in the 2001 study about gender preferences. 72.5 per cent of mothers indicated a desire (at the time of marriage) for two children (one boy, one girl). 93.6 per cent of mothers and 93.8 per cent of grandmothers indicated a desire to educate male and female children in the household equally. And 97.1 per cent of mothers and 94.8 per cent of grandmothers indicated a willingness for female children to seek outside employment after schooling.

While nutritional status, health status and child survival improved significantly, food consumption among young children remains an issue of some concern. Relative to the 1971 findings, the proportion of children consuming adequate calories improved markedly, both among the more advantaged jats and among the less advantaged ramdasias. However, at the lower end of the food consumption spectrum, over 40 per cent of ramdasia children and 20 per cent of jat children in 2001 were still consuming less than 50 per cent of their caloric allowance. While in 1971 most of the poorly fed children were girls, this was not the case in 2001.¹

With good health care and safe water, most of those children inadequately fed, particularly among the jats, managed to grow reasonable well and to survive minor childhood illness. But such low levels of caloric intake clearly leave these children vulnerable, particularly to a more serious epidemic of childhood illness. The problem deserves attention. At present, Integrated Child Development (ICDS) services cover most of Punjab state but with services that

still pay inadequate attention to the nutritional well-being of children under the age of two. ICDS services, well targeted to children at the low end of the nutritional spectrum, and with a strong behavioural change communications component could be expected to remedy this gap.

A Postscript on Gender-Based Abortion and Gender Balance

Serious concerns have been raised, particularly in northern and western India about the problem of gender-based abortion. The traditionally strong preference for sons in these areas, relating to issues ranging from social security and inheritance to death rituals and dowries, has led, in the past to the neglect of unwanted or 'excess' girls (note the unusually high percentage of malnourished females in 1971) and, in extreme cases, to infanticide. With the advent of ultrasound testing, gender-based abortion has provided a newer means of eliminating such 'excess' females.

The effects of this technology are reflected in recent Punjab state census data indicating a decrease from 875 females aged birth to six years per 1,000 males of the same age in 1991, to 793 females of that age in 2001.

Data carefully gathered as part of this study in 2001 indicate that sonogram testing and gender-based abortion are relatively rare in this rural area. In the 204 sample households, nine women had had sonograms, four of these for medical problems. Of the remaining five (three jat, two ramdasia; three with two previous female children or more, two with one previous female child), four tests found a male fetus, while one test found a female fetus which resulted in an abortion.

The likelihood of increases in future sonogram testing appears low in Punjab given newly enforced state laws (including large fines and the registration and monitoring of private clinics) and increased vigilance by religious communities.

With minimal gender-based abortion and significantly reduced neglect and mortality of female children, gender balance in this area of rural Punjab actually has improved, from 894 females to 1,000 males aged birth to six years in 1971 to 965 females in 2001. **EW**

Note

- 1 There also may be a problem at the upper end of the food consumption spectrum. Among jat children, whose caloric intake averaged 115 per cent of allowances, a significant proportion of children are consuming far more than 100 per cent of allowances, raising concerns about childhood obesity.

Table 3: Live and Dead Siblings per Sample Child by Caste

Group	Average Number of Live Siblings (SD)		Average Number of Live Born Dead Siblings (SD)	
	1971	2001	1971	2001
Jats	2.16	0.90 (0.84)	0.49	0.04 (0.20)
Ramdasias	2.36	0.93 (0.96)	0.85	0.06 (0.23)
Other	2.08	0.94 (0.95)	0.53	0.17 (0.52)
Total	2.22	0.93 (0.92)	0.64	0.08 (0.35)

Table 4: Comparative Findings on Other Causes of Malnutrition

	1971	2001
Literacy of Mothers (per cent)	22.6	84.8
Superstitious belief in casting of shadow as causing severe malnutrition (per cent)	55.8	0
Complementary food introduced (months)	10.6	7.2
Index of frequency and severity of diarrheal infection (0-7)	1.99	0.94
Immunisations up to date	Sporadic	100%
Safe water supply	Sporadic	100%
Income (in constant rupees)		
Jats	2.20 times higher in 2001	
Ramdasias	2.16 times higher in 2001	

RURAL CREDIT DELIVERY

Reaching the Unreached

G. Srinivasan

Credit for agriculture must expand at a faster clip than before because of the compulsive need to speed up agricultural growth not only to feed a population of one billion plus but also to generate exportable surplus. Alongside, there is a need to shift product mix towards animal husbandry, fisheries and horticulture which have immense potential for income generation to rural people, besides boosting the country's export earnings considerably. In the wake of the draft on public resources, the banking system and informal credit agencies would have to evolve innovative methods and schemes to stay alive to cope with the unmet credit needs of both organized farmers and the informal activities of rural people. A proper synergy could be struck to serve these important constituents of economic development over the long haul by the existing credit delivery institutions.

Rural development in the country over the years made stupendous strides, thanks to a durable institutional arrangement in the form of credit delivery system for the rural people in general and the farmers in particular. It is not only true that monsoon still remains a mystery and gamble but also our agriculture too is increasingly emerging as a gamble in the market. In the liberalized economic regime ushered in the early 1990s, the existing machinery like minimum support price to farmers through the Food Corporation of India (FCI) procurement policy or other government agencies such as Maharashtra's monopoly cotton procurement appears to be under attack because of their woeful lack of sustainability. Institutional arrangements like cooperative banks and the National Bank for Agriculture and Rural Development (NABARD), regional rural banks, local area banks have been serving the rural people well but these institutions need to be beefed up and

professionalized.

In the crucial credit delivery for promoting and sustaining agriculture and rural development, the apex body that stands in the vanguard is indubitably NABARD. It was set up under an Act of Parliament through the merger of the agriculture credit department and rural planning and credit cell of the country's central bank, RBI and the Agriculture Refinance and Development Corporation (ARDC) over two decades ago. This organization which was primarily reliant on the Government and the RBI for resources had been deprived of this cozy support. In recent years, consequently, it is now compelled to fend for itself by being told to raise new sources on the market and it did succeed by tapping the market. It might be recalled that NABARD was primarily



a refinancing agency with its underlying remit being that the banking system should do the lending and NABARD, as the development agency, should extend resource support to the banking system to enable it to onlend more for agriculture. This way, NABARD works through the Regional Rural Banks, Cooperative Banks and also through the state governments for rural infrastructure. It is interesting to note that NABARD, which has given loans worth Rs.1,40,000 crore of aggregate lending from its advent till date has, well-nigh no non-performing assets (NPAs), a remarkable and rare feat when the banking system smacks of NPAs. Its NPA ratio was 0.96 per cent in 2002-03.

RIDF - A Milestone

As refinancing has been a prominent portfolio of services by NABARD, the organization reached a milestone in its career in 1994-95 when the Government set up the Rural Infrastructure Development Fund (RIDF). This was to address the specific needs of a plethora of projects in rural areas which banks were not able to adequately address. The objective was to invest money the banks were not able to lend to the priority sector for development of rural infrastructure. This money is not extended to NABARD in advance but it lends money to the state governments and is reimbursed by the banks. RIDF was veritably a watershed development in the annals of NABARD as it was not financing state governments till then. Thus, starting from 1994-95, NABARD has sanctioned about Rs.29,000 crore worth of state government projects even as the aggregate allocation by the government under the RIDF has touched Rs.33,500 crore. NABARD's exposure in state governments would result in the creation of irrigation potential of nearly seven million hectares, over and above ensuring connectivity in the form of 140,000 kms of rural roads and provision of drinking water, flood protection, mending the drainage system and establishing primary health centers and primary schools in rural areas.

Apart from these services, NABARD also played a complementary role in popularizing the Kisan Credit Cards (KCC) as it was tasked to formalize and familiarize the KCC among farmers. Till date, about 3.13 crore cards have been issued with NABARD pushing the Regional

Rural Banks and Cooperative Banks in this endeavour as KCCs lessen the hassles for the individual to reach the banks and take money, with banks also getting benefited by sanctioning loans for three years and not for one. Moreover, as part of its promotional role, NABARD has also joined hands with the ICICI Bank and the National Stock Exchange to establish the Commodities and Derivatives Exchange of India, which would be launched in a couple of months. The institution also intends to take up a 30 per cent stake in the Agriculture Insurance Company of India with General Insurance Corporation of India and four other insurance companies.

Micro Credit - Focus Area

It would be germane to note that the Tenth Five-Year

Micro-finance through SHGs has emerged as a catalyst to help meet the credit needs of informal or unorganized rural sector in the recent past. The Reserve Bank of India has initiated a slew of steps to encourage bank lending to SHGs as part of a mainstream banking activity. Credit extended by commercial banks to SHGs is treated as part of priority sector lending in order to encourage banks to engage in this sort of activity. Banks have also been bestowed considerable flexibility to determine procedures and design loan products for SHGs responding to local conditions.

Plan (2002-07) document has stated that a crucial area of priority sector lending entails credit to the social sectors and activities which might not be bankable in the usual sense of the term, but which might have high social returns. In this regard, micro-credit is well established as an area of focus and it has been found that the loan servicing experience with micro-credit could be as good or even better than credit to formal sectors if it is implemented through appropriate mechanisms such as group lending. The Planning Commission has pointed out that the experience of public sector banks in providing credit through self-help

groups (SHGs) has been salutary and this lending activity ought to be expanded to cover a wider clientele. It needs to be noted in particular that a great deal of informal sector activities in the rural area could be effectively serviced by non-bank financing intermediaries, which are able to handle such intermediations, charging interest rates that cover the high cost of managing an inherently more informal sector loan. Another avenue through which banks could meet the credit needs of the informal sector is the self-help group which extend micro-credit and a pilot project linking self-help groups to banks was launched in 1992. It was envisaged that NGOs could help build up capacity among the rural poor to organize themselves into SHGs and approach the banks for financing. The experience has been very encouraging thus far.

Considering the fact that the rural poor in the

unorganized sector was unable to come out of the clutches of moneylenders imposing usurious interest rates, the credit needs of the rural poor are marked by the woeful absence of any clear distinction between production and consumption purposes. The needs are minuscule but often arise at unpredictable times and meeting this emergency credit needs is crucial if their reliance on unorganized credit agents is to be brought down. A study made by Pricewaterhouse Coopers, a reputed investment consultant, shows the following pattern of credit usage by the rural poor: (i) 63 per cent of total credit availed by the rural poor is used for consumption purposes with only 37 per cent going to productive use; (ii) the overall share of organized sector in credit flow to the rural poor is around 16 per cent; (iii) non-availability of credit for consumption needs from the organized sector with very high cost to the borrowers; (iv) delay in sanction of loans by the organized sector and (v) very high rate of defaults under the government sponsored programmes has led to reluctance on the part of the banks to extend credit to rural poor.

Bank Lending to SHGs

It is in this context that micro-finance through SHGs has emerged as a catalyst to help meet the credit needs of informal or unorganized rural sector in the recent past. The Reserve Bank of India has initiated a slew of steps to encourage bank lending to SHGs as part of a mainstream banking activity. Credit extended by commercial banks to SHGs is treated as part of priority sector lending in order to encourage banks to engage in this sort of activity. Banks have also been bestowed considerable flexibility to determine procedures and design loan products for SHGs responding to local conditions. A micro-finance development fund has been set up in NABARD to give training to SHGs members, partner NGOs, banks and government agencies, provide start-up funds to micro-finance institutions and meet their initial operating deficits, as also the cost of formation and nurturing of SHGs. The Plan panel firmly believes that the programme of providing credit to SHGs has made a good start and is a potentially important instrument for expanding credit to the informal sector and ought to be vastly expanded in future. This way it would provide relief and comfort to legions of rural people who have evolved SHGs and popularized micro credit machinery to manage their needs for both production and consumption.

NABARD also experimented with innovative ways of reaching unorganized people in rural areas and accordingly it also floated SHGs. Under the SHGs, NABARD made it a tremendous success. There are 714,000 SHGs that are linked to banking system today.

What is important is that over one crore women has emerged as beneficiary of this scheme. Besides this important initiative in the rural informal sector, NABARD has also been proactive since the 1990s in the field of watershed development and the other in tribal welfare programme.

As India went in for economic reforms under which markets allocate resources efficiently in tune with supply and demand equation, the role of the government has become muted. However, in traditional areas like agriculture, help is on hand for the farming community particularly the issue being politically sensitive and impinges on the lives of 650 million Indian farmers who eke out their livelihood on agriculture. Due to the persistent fiscal constraints of the Government, both in the Centre and in the States and smugness generated by satisfactory performance on the farm front mainly from successive spate of good monsoon, public investment in the country's agriculture has dwindled since 1981-82 and the trend rate of decline is estimated at 3.2 per cent per annum. The decline in public investment has not only impeded new infrastructure but also impacted on maintenance of extant agricultural infrastructure and this has directly hit output growth.

Credit for agriculture must expand at a faster clip than before because of the compulsive need to speed up agricultural growth not only to feed a population of one billion plus but also to generate exportable surplus. Alongside, there is a need to shift product mix towards animal husbandry, fisheries and horticulture which have immense potential for income generation to rural people, besides boosting the country's export earnings considerably. So in the post-WTO trading regime, India needs to play its card ably to carve a niche for itself among the trading majors of the world. For this, support to the country's age-old avocation like agriculture ought to be on a sustained and sustainable basis. In the wake of the draft on public resources, the banking system and informal credit agencies would have to evolve innovative methods and schemes to stay alive to cope with the unmet credit needs of both organized farmers and the informal activities of rural people. A proper synergy could be struck to serve these important constituents of economic development over the long haul by the existing credit delivery institutions so that the future of Indian agriculture would be bright and the plight of the farmers sound.

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Rural Employment and Poverty

Strategies to Eliminate Rural Poverty within a Generation

This paper discusses the likely scenarios regarding employment and income growth in agriculture and non-agriculture in rural and urban areas under various assumptions about sectoral growth rates and employment elasticities. It is evident that India faces a problem in generating enough employment in the years ahead to keep pace with the growth in the labour force as also in raising wages and productivity of workers. Against this backdrop the authors consider possible strategies for increasing employment significantly reducing rural and urban poverty by 2020.

G S BHALLA, PETER HAZELL

Given the predominance of the agricultural sector in the national economy both in terms of its contribution to the gross domestic product and more so in terms of employment provided by it, a meaningful employment strategy for rural India must give high priority to the development of agriculture and allied rural sectors. This paper is devoted to a discussion of likely scenarios regarding employment and income growth in agriculture and non-agriculture in rural and urban areas under various assumptions about sectoral growth rates and employment elasticities and discusses possible strategies for increasing employment and significantly reducing rural and urban poverty by 2020.

Over the past three decades, the employment scene in India has undergone some important changes. First, although agriculture continues to occupy a predominant position in the Indian economy, its share in GDP has declined from 44.8 per cent in 1977-78 to only 27.6 per cent in 1999-2000 at constant 1993-94 prices. However, there has been very little decline in agriculture's share in employment. The share of employment in agriculture (UPSS) declined only from 73.9 per cent in 1972-73 to 60.2 per cent by 1999-2000 (Table 1).¹ With 60 per cent of the national workforce producing a little more than a quarter of GDP, the relative productivity of workers in agriculture is less than one-fourth that in non-agricultural occupations.

Second, as per the definitions used by the National Sample Survey Organisation (NSSO) in India, the incidence of open unemployment remains relatively low. During the entire period 1973-74 to 1999-2000 for which NSS data are available, employment (defined in terms of UPSS) grew at an annual rate of 1.94 per cent (Table 2) as against a growth rate of 1.96 per cent in the labour force. But during 1993-94 to 1999-2000, the growth rate of employment decelerated sharply to only 1.03 per cent pa (Table 2) and despite some slowing in the growth of the labour force, there was some increase in open unemployment during 1993-94 to 1999-2000. According to NSS, there were 3.98

million unemployed in India in 1973-74 and their number had increased to 7.49 million by 1993-94 and to as much as 9.15 million by 1999-2000. In the meantime, the incidence of unemployment (defined as the ratio of unemployed persons to the labour force) increased from 1.64 per cent in 1973-74 to 1.96 per cent in 1993-94 and to 2.25 per cent in 1999-2000 (Table 3).

Even so, it needs to be underlined that although open unemployment registered an increase during 1993-94 to 1999-2000, both the rate and number of open unemployment are not very large in relation to the workforce. The real problem in India is

Table 1: Share of Agriculture in GDP and Employment

Year	Per Cent Share of Agriculture in GDP at 1993-94 Prices	Per Cent Share of Agriculture in Employment (UPSS)
1972-73	44.8	73.9
1993-94	33.5	63.9
1999-2000	27.6	60.2

Source: National Accounts Statistics and Survey on Employment and Unemployment – various rounds.

Table 2: Growth Rates of Population, Workers (Employment) and Labour Force

	2000-1994	1994-83	2000-1983	2000-1978	2000-1973
Population	1.956	2.103	2.049	2.077	2.088
Workers (Employment)					
(a) UPS	1.557	2.105	1.905	1.919	na
(b) UPSS	1.030	2.037	1.670	1.789	1.936
Number of Unemployed					
(a) UPS	1.363	2.095	1.828	-0.247	
(b) UPSS	1.482	3.316	2.645	1.138	3.136
Labour Force					
(a) UPS	1.551	2.105	1.903	1.842	na
(b) UPSS	1.040	2.063	1.690	1.774	1.960

Source: NSSO Surveys for 1972-73, 1977-78, 1983, 1987-88, 1993-94 and 1999-2000.

not so much open unemployment but employment at very low levels of productivity [Planning Commission 2001]. The future challenge is not only to create more jobs to keep pace with the growth in the labour force, but also to increase the average productivity of all jobs.

Third, deceleration in the growth of employment during the post-liberalisation period 1993-94 to 1999-2000 has not been uniform across sectors of the economy, and a significant development has been a sharp decline in employment growth in agriculture during the 1990s (Table 4). Thus, while the growth rates in the secondary and tertiary sectors decelerated from 3.62 per cent and 4.02 per cent pa during 1972-73 to 1993-94 to 2.43 per cent and 3.01 per cent pa, respectively during 1993-94 to 1999-2000, the growth rate in agricultural employment decelerated from 1.49 per cent pa to only 0.01 per cent pa.

There are several reasons for the near collapse of employment growth in agriculture during the 1990s. The main reason was a sharp deceleration in the growth rate of agriculture in general and crop production in particular. At 1980-81 constant prices, the growth of agricultural GDP decelerated from 3.94 per cent pa during 1980-81 to 1990-91 to only 1.95 per cent pa during 1990-91 to 1998-99. However, the revised series of GDP at 1993-94 prices shows that there was very little decline in the growth rate of total GDP originating from agriculture; the growth rate was 3.06 per cent during 1993-94 to 1999-2000 compared with 3.18 per cent during 1983-84 to 1993-94. The main reason for the difference in the two estimates is the much higher contribution of fruits and vegetables to GDP in the 1993-94 series. But the National Statistical Commission (2001) has expressed serious doubts about the validity of these data.²

In any case, all available data confirm that there was a steep deceleration in the rate of growth of output of the crop sector during the 1990s compared with the 1980s. The growth rate of all crops taken together, the dominant component of the agricultural sector, decelerated from 3.46 per cent pa during 1980-81 to 1990-91 to only 2.38 per cent pa during 1990-91 to 1999-2000. This sharp decline in the growth of crop output adversely affected employment growth in agriculture during the 1990s. A decline in the growth rate of infrastructure investment in agriculture over a prolonged period of time, declining efficiency of input use, technological stagnation, and surplus cereal production and falling prices have all contributed to the deceleration of agricultural growth in India.

The second reason for the decline of employment in agriculture is the increasing capitalisation of agriculture over the years. Cost of cultivation data show that for major crops the man-hours used per hectare have declined over time. On the other hand, the interest charges on fixed capital per hectare have registered a significant increase over time. For example, in Punjab, in the case of paddy, man-hours per hectare declined from 857.5 during 1981-82 to only 450.4 in 1998-99 and in Haryana from 831.0 man-hours per hectare in 1981-82 to 584.1 in 1998-99. In the case of wheat, the man-hours used per hectare in Punjab declined from 383.9 in 1981-82 to 301.2 in 1999-2000 and in Haryana from 407.5 in 1981-82 to 307.8 in 1999-2000 [GoI 2000].

The phenomenon of slowing employment growth relative to income growth in various sectors is reflected in a secular decline in their employment elasticities over time (Table 5). The employment elasticity for the economy as a whole declined from 0.473 during 1973-74 to 1993-94 to 0.156 during 1993-94 to 1999-2000. But a significant new development is that in

agriculture, where until recently output growth was associated with quite high growth in employment, increasing output is being achieved with relatively little increase in employment. Recent data show that the employment elasticity in agriculture fell sharply from 0.49 during 1973-74 to 1993-94 to only 0.005 during 1993-94 to 1999-2000.³ Statewise and regionwise data also show that there has been a sharp deceleration in employment elasticities in agriculture in almost every state in India. Many states have also recorded a decline in employment elasticity for many individual crops. The decline in employment potential in agriculture was especially high in irrigated regions that had experienced high output growth. Some recent data show that in a few states the employment elasticity in agriculture has even become negative (for example, -0.13, -0.92, -0.13 in AP, Kerala and UP, respectively, during 1993-94 to 1999-2000).⁴

Trends in Non-Agricultural Employment in Rural Areas

The trends in rural employment have been similar to those for the whole economy. Growth in rural employment has decelerated

Table 3: Number Unemployed and Incidence of Unemployment, 1973-74 to 1999-2000

	1973-74	1978	1983-84	1987-88	1993-94	1999-2000
No Unemployed (mn)	3.98	7.14	5.95	9.14	7.49	9.15
Incidence of unemployment (per cent)	1.64	2.58	1.93	2.74	1.96	2.25

Source: NSSO, Survey on Employment and Unemployment, various issues.

Table 4: Growth of Workers (Employment) – 1972-73 to 1999-2000 Rural Plus Urban

	1994-88	1994-73	2000-94	2000-83	2000-78	2000-73
Agriculture, etc and allied	2.18	1.49	0.02	0.90	1.03	1.16
Mining	2.37	4.74	-2.77	1.30	2.70	3.01
Manufacturing	1.68	3.12	1.56	1.84	2.14	2.77
Electricity	3.11	6.33	-4.76	1.25	1.72	3.73
Construction	-0.11	4.96	6.49	5.99	6.20	5.30
Secondary	1.34	3.60	2.43	2.69	2.96	3.34
Trade	3.50	4.19	6.22	4.70	4.23	4.65
Transport	3.67	4.62	5.36	4.15	4.45	4.79
Services	4.66	3.70	-0.42	2.28	2.64	2.76
Tertiary	4.09	3.99	3.01	3.51	3.53	3.77
All UPSS Workers	2.40	2.20	1.03	1.67	1.79	1.94

Source: NSSO Surveys – various rounds.

Table 5: Elasticity of Employment wrt Net Value Added

Period	1983-78	1994-88	2000-94	1994-78	2000-78	1994-74	2000-74
Agriculture, etc and allied	0.490	0.443	0.005	0.443	0.335	0.491	0.361
Mining	1.362	0.379	-0.534	0.428	0.537	0.981	0.614
Manufacturing	0.537	0.298	0.226	0.251	0.354	0.554	0.470
Electricity	0.746	0.312	-0.509	0.249	0.210	0.785	0.449
Construction	3.427	-0.022	1.095	0.686	1.451	1.070	1.084
Secondary	0.791	0.233	0.365	0.306	0.520	0.661	0.587
Trade	0.608	0.583	0.697	0.320	0.676	0.747	0.741
Transport	0.891	0.652	0.540	0.289	0.603	0.666	0.636
Services	0.750	0.642	-0.052	0.225	0.387	0.622	0.432
Tertiary	0.734	0.616	0.350	0.296	0.530	0.676	0.586
All Sectors	0.542	0.413	0.156	0.299	0.350	0.473	0.384

Source: Calculated from National Accounts and NSSO Surveys, various years.

sharply from 1.87 per cent pa during 1973-74 to 1993-94 to only 0.66 per cent pa during 1993-94 to 1999-2000 (Table 6). Agricultural employment also decelerated the most, from 1.44 per cent pa during 1973-74 to 1993-94 to 0.19 per cent pa during 1993-94 to 1999-2000.

In both the rural and urban sectors, the non-agricultural sector has recorded a higher growth rate in employment than agriculture in almost all periods (Tables 4 and 6). In rural areas during the overall period 1972-73 to 1999-2000 and during all the sub-periods, the growth rate of employment in the non-agricultural sectors was appreciably higher than that in agriculture. As a result, the manufacturing, trade and transport and service sectors are emerging as an important source of rural employment.⁵ This is indicative of a gradual diversification of the economy away from the primary sector, albeit at a slow rate.

This increasing diversification of the rural economy has helped to offset the declining growth of employment in agriculture; in fact, it may have been one of the driving factors leading to a lower employment elasticity in agriculture. There has been a notable increase in labour productivity and wages in agriculture, as shown in Table 7, which gives casual wages in India in real terms over various rounds of NSS [Bhalla 1994:82 (Table 4), Bhalla 1997]. Not only have real wages increased, but the wages in non-agricultural occupations are now significantly higher than in agriculture. This suggests that the shift from agriculture to non-agriculture is not a distress phenomenon. Some studies also show that there was less poverty among non-agricultural workers than agricultural workers.⁶

The relationship between agricultural growth and growth of non-agriculture through input, output and consumption linkages has been well documented. Rapid agricultural growth generally triggers a higher growth in output and employment in the non-farm sectors. In India, the emergence of numerous growth poles, including corridors of development along highways; and above all, public expenditure on anti-poverty and other rural development programmes and on rural infrastructure have all been instrumental in increasing output and employment in the non-agricultural sectors.

These positive achievements in terms of rising productivity in agriculture and more so in the process of diversification away from agriculture have been slow and halting. In 27 years from 1972-73 to 1999-2000, the share of agricultural workers in the total workforce has only declined from 73.9 per cent to 60.2 per cent. At this rate of change, even in 2050 more than one-third of the workforce will still be engaged in relatively low-productivity agriculture. The need, therefore, is to develop a strategy to eliminate poverty in rural areas within a generation through

accelerating the growth of agriculture for directly providing productive employment in agriculture and non-agriculture through diversification of agriculture and accelerated growth of non-agricultural activities.

Some of the options available for this are discussed below, where an attempt is made first to project the labour force availability in 2020 and then to model alternative employment scenarios in the economy to 2020.

Labour Force Projections

Table 8 gives the official population projections by sex and residence (Registrar General, 1996). Despite a significant deceleration in population growth, India, because of its large current population, seems destined to have one of the largest populations in the world by 2021, with nearly 1,329 million people (about the same number as predicted for China) compared with 1,027 million in 2001. This corresponds to an average population growth of 1.3 per cent pa. It may be noted that the official population projection for 2001 underestimated the actual population equivalent to underestimating population growth by 0.144 per cent pa. This means that the population could grow at a faster rate than officially predicted for the future, but since the official projections have not so far been revised we have used the 1996 population projections by the registrar general in this study.

These population projections are used to derive projections of the labour force by applying appropriate labour force participation rates. The actual participation rates for workers, defined by their usual principal and subsidiary status (UPSS) from various

Table 7: Casual Wages during Different Rounds of NSS
Current Prices

	1978-79	1983	1987-88	1993-94	1999-2000
Agr 0	3.47	6.32	9.98	19.34	36.22
Secondary	4.53	10.31	16.57	31.93	65.32
Tertiary	4.53	9.29	15.38	28.50	53.39
All-0-9	4.12	7.30	11.75	21.64	42.51

Source: NSS various rounds.

1993-94 prices					
Sectors	1977-78	1983	1987-88	1993-94	1999-2000
Agr 0	12.44	13.55	17.67	19.34	22.39
Secondary	16.46	23.90	28.41	31.93	38.17
Tertiary	17.07	21.69	26.45	28.50	32.75
All-0-9	15.10	16.53	20.39	21.64	25.73

Source: Calculated by authors.

Table 6: Growth of Workers (Employment), 1972-73 to 1999-2000 (Rural)

	1978-73	1983-78	1994-88	1994-83	2000-94	2000-83	2000-78	2000-73	1994-73
	Persons								
Agriculture and allied	1.62	1.36	2.19	1.41	0.19	0.96	1.06	1.16	1.44
Mining	6.02	6.08	2.16	3.63	-2.28	1.44	2.58	3.18	4.82
Manufacturing	5.51	3.45	1.61	2.06	1.61	1.89	2.28	2.85	3.21
Electricity	18.08	1.66	2.21	5.95	-5.65	1.57	1.60	4.35	7.43
Construction	0.29	6.30	-3.49	5.38	6.43	5.76	5.89	4.88	4.43
Secondary	4.72	4.04	0.28	2.89	2.53	2.76	3.08	3.37	3.61
Trade	7.92	2.96	3.23	3.79	3.75	3.78	3.57	4.33	4.50
Transport	7.09	8.06	3.80	4.38	7.29	5.43	6.08	6.26	5.96
Services	4.13	3.50	4.27	3.29	-0.69	1.82	2.24	2.57	3.54
Tertiary	5.77	3.77	3.81	3.61	2.19	3.09	3.26	3.70	4.14
All UPS Workers	2.18	1.84	2.14	1.74	0.66	1.35	1.47	1.60	1.87

Source: NSSO Surveys, various rounds.

NSS rounds, are given in Table 9 and our assumed participation rates for the future are given in Table 10.

The population shares of both males and females in the working age groups 15-29, and 30 and above rose slightly during 1977-78 to 1993-94. These are likely to rise faster in the future with an expected decline in birth and death rates. However, the participation rates of the 5-14 and 15-29 age groups in the work-force are declining as more young people stay in education. This more than anything else explains the fact that labour force participation rates in India do not reflect the growing share of working-age people in the population [Planning Commission 1992:23].

To project the growth in the labour force, we assumed that the participation rates for both males and females in the 5-15 age group will continue to decline and will reach about half their current levels by 2020. This is based on the expectation that child labour will decline significantly and that most children in that age group will go to school (Table 10). It is also assumed that in the 15-29 age group: (a) the rural male participation rate will decline from its current 77.4 per cent to 72.2 per cent by 2020 because a larger proportion of these males will be going on for higher education (but the urban rate will marginally increase from 66.5 per cent to 67 per cent; and (b) the female participation rate will increase from 41.1 per cent to 42 per cent in rural areas and from 17.3 per cent to 18 per cent in urban areas during the same period on the likelihood of more women opting for work. Some minor changes are also assumed in the participation rates for the 30+ age group for females (Table 10).

Table 11 provides the labour force projections for 1991 to 2020 distributed by sex and rural/urban residence based on the above assumptions. The table shows several interesting features. First, as expected, the average compound growth rate of the labour force (1.75 per cent pa) is much higher than the 1.35 per cent pa growth rate of the projected population. This is because even when birth rates have declined, there is a big bulge in the population in the 14+ age group. Second, the growth rates of the urban labour force (2.86 per cent pa) is much higher than the corresponding growth rate for the rural labour force (1.33 per cent pa). The sizeable difference in the growth rates of the labour force in rural and urban areas arises because of the assumption of increasing urbanisation over the next 20 years made by the registrar general. Finally, the current participation rates of women in the workforce are much lower than those of

men, and we have assumed the participation rates for female workers, will increase at a faster rate than male workers particularly in the 15-29 age group.

Model for Employment Projections

A simple model for projecting employment is based on the assumption that the supply of labour will continue to exceed demand leading to continued unemployment and underemployment of workers and little or no pressure on wages. In this scenario, future levels of employment will be set by demand factors alone. Labour demand is determined by growth of output and the employment elasticity of each sector. Assuming three sectors (agriculture, A; manufacturing, M; and services, S), total employment E is:

$$E = E_A(Q_A) + E_M(Q_M) + E_S(Q_S) \quad \dots(1)$$

Where E_i and Q_i denote the employment and output of sector i, respectively.

From equation (1), the equation for the annual growth in national employment can be derived as follows. Taking the total derivative,

$$dE = \partial E_A / \partial Q_A \cdot dQ_A + \partial E_M / \partial Q_M \cdot dQ_M + \partial E_S / \partial Q_S \cdot dQ_S \quad \dots(2)$$

Let ξ_i denote the employment elasticity of sector i with respect to output; then

$$\xi_i = \frac{\partial E_i}{\partial Q_i} \cdot \frac{Q_i}{E_i}$$

Rearranging, $\frac{\partial E_i}{\partial Q_i} = \xi_i \frac{Q_i}{E_i}$, and substituting into (2),

$$dE = \xi_A \cdot E_A \cdot \frac{dQ_A}{Q_A} + \xi_M \cdot E_M \cdot \frac{dQ_M}{Q_M} + \xi_S \cdot E_S \cdot \frac{dQ_S}{Q_S} \quad \dots(3)$$

Dividing throughout by E and denoting, $\frac{dX}{X} = \dot{X}$, the annual rate of growth for any variable X, (3) can be written as:

$$\dot{E} = \xi_A \cdot s_A \cdot \dot{Q}_A + \xi_M \cdot s_M \cdot \dot{Q}_M + \xi_S \cdot s_S \cdot \dot{Q}_S \quad \dots(4)$$

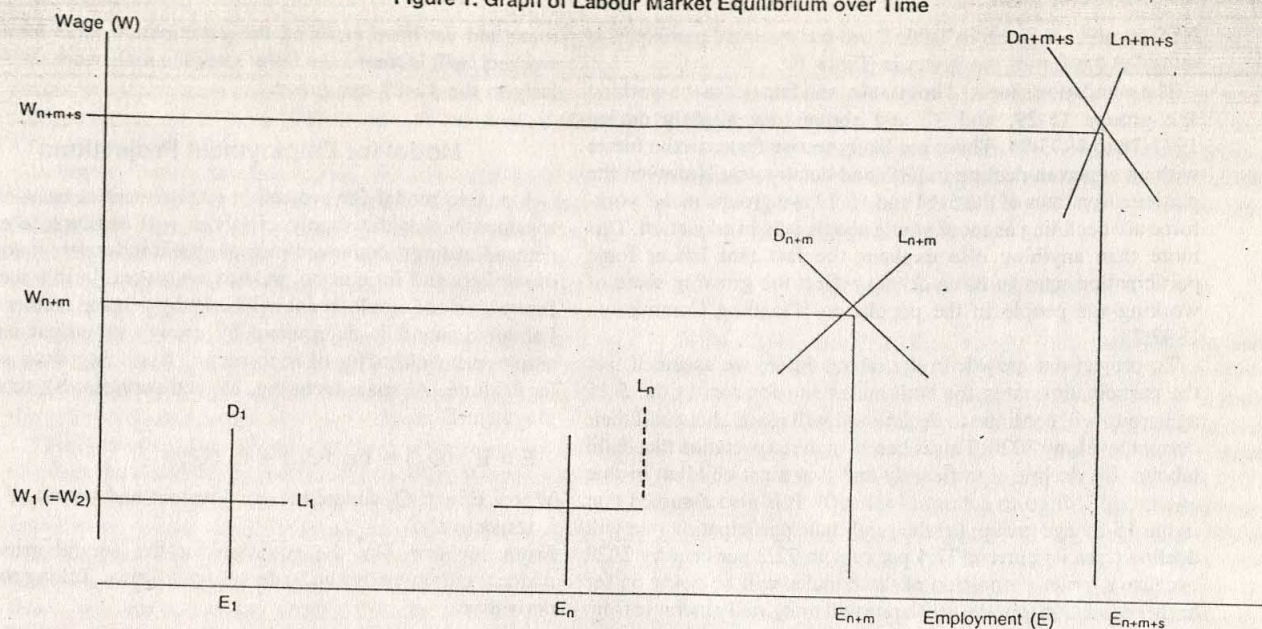
Where s_i is the employment share of sector i. This model, which we shall call model 1, predicts the growth rate in national employment as a simple function of the growth rate of output

Table 8: Population Projections by Age and Sex
(in millions)

Age Group	1991			1996			2001			Revised 55th Round, Jan 2000		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
5-14	110.5	100.8	211.3	121.9	111.3	233.2	131.7	116.0	247.8	131.9	116.2	248.0
15-29	115.5	109.7	225.1	127.5	121.0	248.5	136.4	128.8	265.2	136.2	128.6	264.9
30+	158.3	143.6	301.6	174.5	158.5	332.9	194.3	185.7	379.9	194.2	185.5	379.7
All ages	439.2	407.1	846.3	484.9	449.4	934.2	519.6	484.5	1004.1	519.6	484.4	1004.0
r	324.3	304.4	628.7	351.2	328.6	679.8	367.8	345.0	712.8	374.0	353.5	727.5
u	114.9	102.7	217.6	133.7	120.7	254.4	151.8	139.5	291.3	145.5	130.9	276.5

Age Group	2006			2011			2016			2021		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
5-14	113.2	108.1	221.2	111.0	105.2	216.2	116.8	110.7	227.6	122.9	116.5	239.4
15-29	168.1	152.5	320.6	178.7	166.2	344.9	174.9	165.9	340.8	184.0	174.5	358.5
30+	224.9	213.8	438.7	255.6	242.7	498.3	294.0	278.4	572.4	309.3	292.8	602.1
All ages	564.5	529.6	1094.1	606.7	572.1	1178.9	648.9	614.7	1263.5	682.6	646.5	1329.1
r	392.7	369.3	762.0	413.0	388.7	801.7	431.7	406.2	837.9	436.7	426.8	863.5
u	171.8	160.3	332.2	193.7	183.5	377.2	217.2	208.4	425.6	245.9	219.7	465.6

Figure 1: Graph of Labour Market Equilibrium over Time



of each sector, the employment elasticity of each sector with respect to output, and the share of each sector in national output. To estimate this model, base year estimates of the parameters ξ , s and Q dot are required.

Model 1 is relevant for short to medium-term employment projections for India given the current labour-surplus situation. But it is less useful for longer-term projections such as are attempted in this paper given that many reasonable scenarios for annual growth rates in Q_A , Q_M , Q_S and lead to situations in which labour demand will exceed the projected labour supply. Were this to happen, wages would rise and impact on future growth rates and levels of employment, changes which are not captured in model 1. To make projections for the year 2020, we also need a model that is more appropriate for full employment situations. At the same time, we do not want to embark on the complexities of a full general equilibrium model. A reasonable compromise is to model the labour market with an endogenously determined wage but without trying to endogenise the demand and hence prices for sector outputs or the level of investment in the economy. Our full employment model, called model 2, has the following specification.

We assume that labour demand in each sector is a function of the wage rate w and capital stock K in that sector; that labour supply depends on the number of available workers (N) and their willingness to work at different wage rates (determined by a supply elasticity); and that the wage rate serves to clear the labour market. With these assumptions, total employment, labour supply (L) and the labour market equilibrium ($E = L$) can be written as:

$$E_A(w, K_A) + E_M(w, K_M) + E_S(w, K_S) = L(w, N) \quad \dots(5)$$

The capital stock rather than sector output is used since the latter is also a function of the wage rate. The capital stock is taken as exogenous in this model, and we make assumptions about its growth over time. For simplicity, we also assume the same wage rate applies to all sectors.

Appendix derives the annual rate of change in the wage rate w . This can then be used to calculate the annual growth rate in total employment, which is:

$$\dot{E} = \sum_i e_i s_i \dot{w} + \sum_i \mu_i s_i \dot{K}_i, \quad i = A, M, S \quad \dots(6)$$

$$\text{where } \dot{w} = \frac{\dot{N} - \sum_i \mu_i s_i \dot{K}_i}{\sum_i e_i s_i - \lambda}$$

Table 9: Participation Rates Over Various NSS Rounds

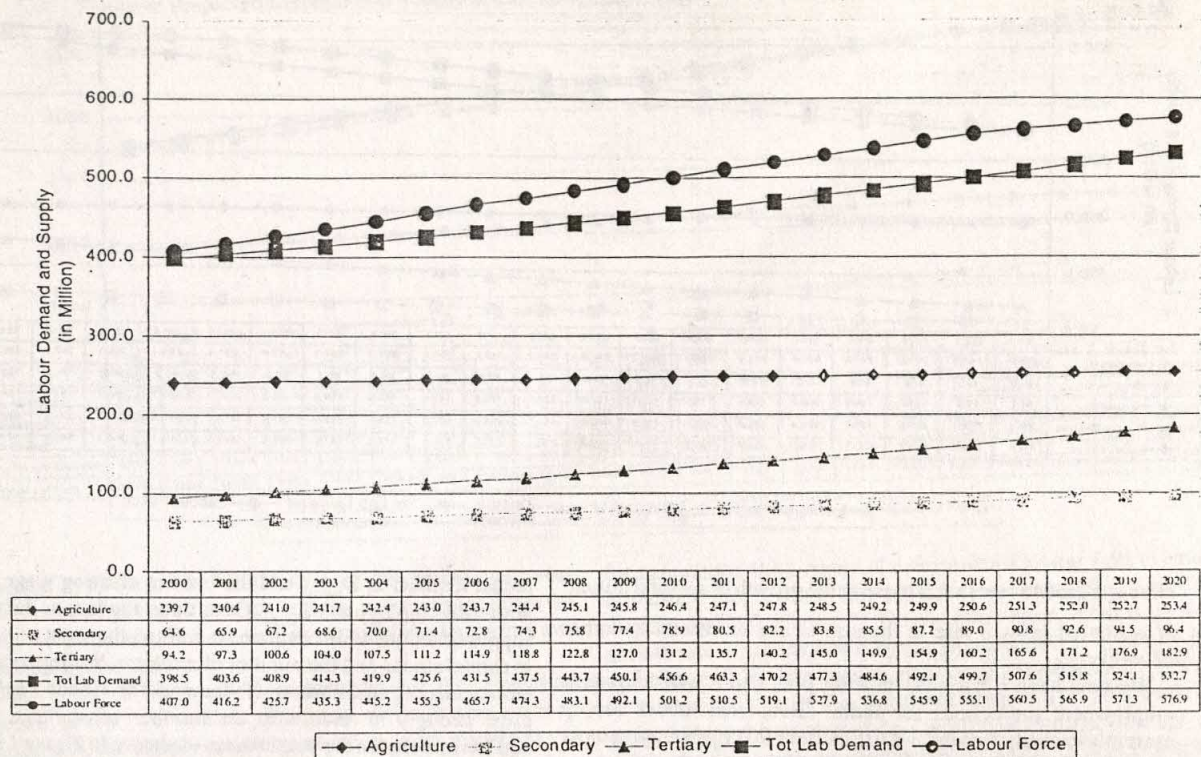
Years	UPSS					
	Total	Rural		Urban		
		Males	Females	Total	Males	Female
January 1, 1978	39.5	53.7	24.8	31.9	49.7	12.3
June 1, 1983	39.1	52.8	24.8	32.0	50.0	12.0
January 1, 1988	38.5	51.7	24.5	31.5	49.6	11.8
January 1, 1994	39.0	53.8	23.4	32.7	51.3	12.1
January 1, 2000	38.0	52.2	23.1	32.4	51.3	11.7

Source: NSSO Surveys, various rounds.

Table 10: Assumed Age, Sex and Residence Specific Labour Force Participation Rates

Year	5-14 Years		15-29 Years		Above 30 years	
	Males	Females	Males	Females	Males	Females
Rural India						
1993-94	7.18	7.33	81.06	45.33	91.67	54.08
1996	6.50	6.00	79.00	43.50	90.68	51.50
2001	4.85	4.93	77.39	41.09	90.70	48.77
2006	4.00	4.00	75.0	40.50	90.00	47.00
2011	3.00	3.00	74.4	41.00	89.50	46.00
2016	2.60	2.80	73.8	41.50	89.00	47.50
2021	1.75	2.00	72.2	42.00	88.00	49.00
Urban India						
1993-94	3.58	2.39	68.86	20.46	97.82	29.19
1996	3.00	1.80	67.00	18.00	94.00	20.30
2001	2.83	1.99	66.52	17.33	87.85	23.48
2006	2.33	1.50	65.00	17.00	87.50	24.00
2011	2.00	1.25	65.50	16.50	87.50	24.50
2016	1.70	1.00	66.50	17.00	87.00	24.50
2021	1.50	0.90	67.00	18.00	87.00	24.50

Figure 2: Projected Demand and Supply of Labour to 2020 – Low Growth Low Employment Elasticity



To use this model we need base year estimates of the following parameters:

e_i = The labour demand elasticity of sector i with respect to the wage rate.

s_i = The employment share of sector i in total employment (E_i / E).

μ_i = The employment elasticity of sector i with respect to changes in the capital stock.

λ = The supply elasticity of labour with respect to the wage rate.

These can be updated periodically into the future for more precise forecasts. We also need to project the following exogenous variables into the future:

\dot{K}_i – Annual growth rate of capital stock in sector i . If we assume

Cobb-Douglas production functions and Hick's neutral technological change, then K_i would capture all sources of growth in sector i output other than employment growth. We should therefore

Table 12: Parameters for Models

Sector	Elasticity of Labour Demand wrt Wage (e)	Elasticity of Demand wrt Employment wrt Capital Stock (μ)	Elasticity of Employment wrt net Value Added (ξ)		Growth Rate of NDP Per Cent Per Annum		
			Low	High	Low	Base	High
Agriculture	-0.292	0.356	0.1	0.3	2.78	3.9	4.8
Secondary	-0.933	0.306	0.35	0.35	5.78	7.0	11.5
Tertiary	-1.388	0.760	0.5	0.5	6.76	7.8	10.5
All sectors	-0.614	0.286	0.34	0.34	5.04	6.5	9.1

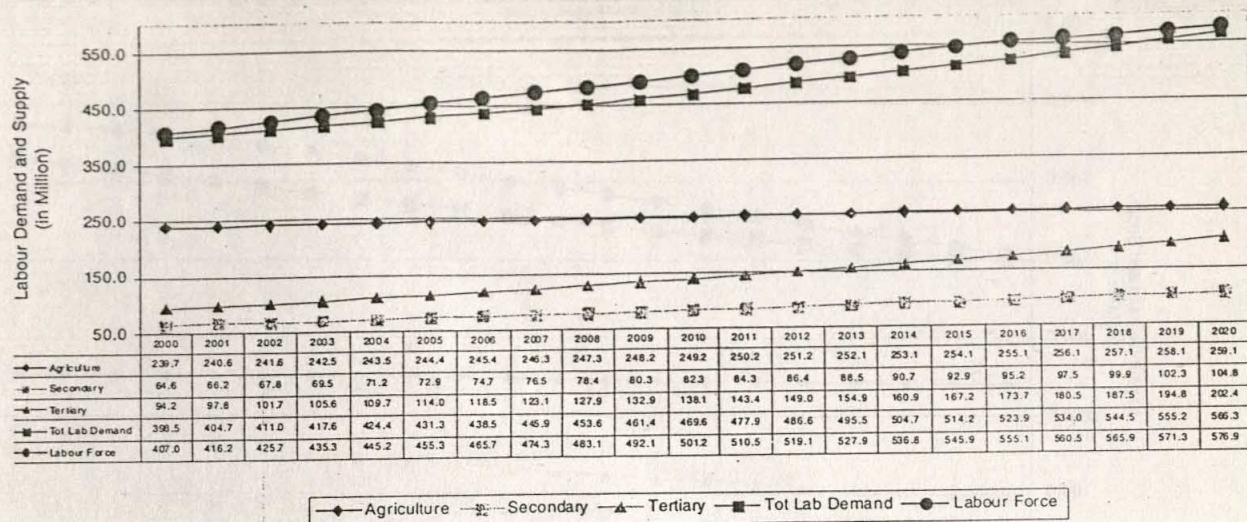
Table 11: Labour Force (5+ Years) Projections for 2021
(Using assumed participation rates given in Table 10)
(in million)

Year	Rural			Urban			Rural + Urban			Growth Rate Five-Yearly
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
1993-94*	191.00	105.80	296.80	67.60	18.10	85.80	258.60	123.90	382.50	
2000**	202.00	106.80	308.90	79.80	19.30	99.20	281.00	126.10	407.00	1.04
2006	231.66	116.16	347.82	93.96	23.88	117.83	325.62	140.03	465.65	2.21
2011	248.51	124.26	372.76	109.52	28.28	137.79	358.02	152.53	510.56	1.86
2016	261.99	134.93	396.92	125.19	33.07	158.26	387.18	167.99	555.18	1.69
2021	260.47	144.63	405.10	141.98	35.41	177.39	402.45	180.04	582.49	0.97
2020	260.78	142.63	403.45	138.45	34.93	173.39	399.35	177.56	576.92	0.97
Growth rate 2000 to 2021	1.21	1.44	1.29	2.76	2.91	2.83	1.71	1.70	1.71	
2000 to 2020	1.27	1.45	1.33	2.77	2.99	2.86	1.76	1.71	1.75	

Notes: * As per 1993-94 participation rates.

** As per participation rate on January 1, 2000 (55th round of NSS).

Figure 3: Projected Demand and Supply of Labour to 2020 – Base-Line Growth Low Employment Elasticity (Lambda = 0.6)



choose a growth rate that is close to the growth in sectoral output.
 N – Annual growth rate in the size of the workforce (number of workers).

We now have a basis for making both short- and long-term employment projections for India. Given that labour supply currently exceeds demand, we use model 1 to project employment for different scenarios of growth of sector outputs and labour supply until such time as the economy achieves full employment. Once that turning point is reached, we shift to model 2 for all subsequent employment projections. This also requires that we switch to using forecasts about growth in sector capital formation rather than output as the prime driving force for employment.

Figure 1 portrays the nature of the employment forecasts over time. In the base year ($t=1$), model 1 assumes a perfectly elastic labour supply (L_1) and a perfectly inelastic demand (D_1) leading to total employment $E_1 = D_1$ at wage w_1 . Over time, labour demand grows with growth in output but labour supply remains perfectly elastic in the model. Total employment in year $t = n$, for example, is $E_n = D_n$ and the wage rate remains unchanged at w_1 in Figure 1. Not specified in model 1 is the fact that labour supply is constrained each year by the available number of workers. This constraint is shown for year $t = n$ as the vertical segment of the labour supply function L_n . This constraint can be ignored until such time as projected demand exceeds the projected supply, at which point the wage w_1 would no longer clear the market and model 1 would no longer be relevant. By simply comparing our projected levels of employment from model with the projected labour supply each year, we can determine if and in what year such a turning point is reached. Once a turning point year has been identified, we switch to model 2 to make employment projections for all subsequent years.

Figure 1 portrays the assumed labour market equilibrium for some such full employment year (say $t = n+m$). Model 2 assumes a downward sloping demand curve for labour and an upward sloping labour supply, the location of which is conditioned by the forecasted capital stocks and the number of workers, respectively, for each year. In year $t = n+m$, labour supply is L_{n+m} and

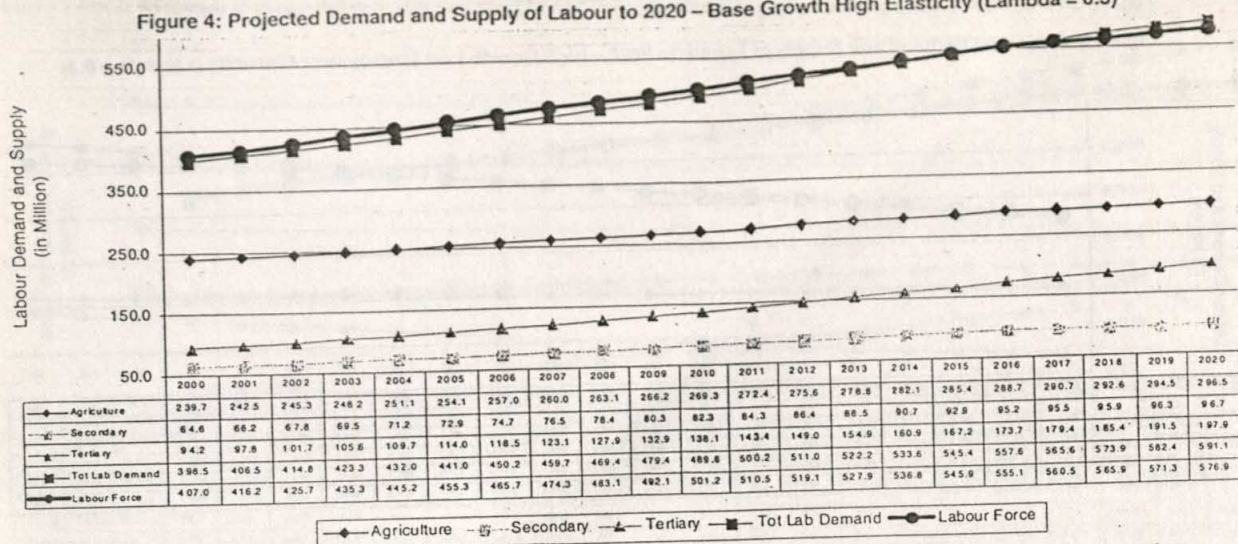
labour demand is D_{n+m} , and the market clearing wage is w_{n+m} with total employment E_{n+m} . Over time, the labour demand and supply functions will continue to shift to the right with growth in capital stocks and the number of workers, leading to a shifting labour market equilibrium. If demand for labour continues to grow strongly in relation to the number of workers, then the equilibrium shown for year $t = n+m+s$ shown in Figure 1 indicates a continuously rising wage rate. If a line were drawn through the sequence of market equilibria displayed in Figure 1, this would indicate the predicted growth path for employment and wages in the Indian economy over time.

Most of the parameters needed for these labour market models can be calculated from available national data. In our exercise, NSSO data on quinquennial survey of employment and unemployment in India from 1973-74 to 1999-2000 were used to derive sectorwise growth of employment and wages, and CSO data for

Table 13: Base-Line Growth, High Employment Elasticity

Period	Annual Per Cent Growth					
	Wage $\lambda = 0.6$	Employ	Wage $\lambda = 0.3$	Employ	Wage $\lambda = 0.1$	Employ
1983-2000	NA	1.61	NA	1.49	NA	1.37
2000-06	NA	2.09	NA	2.02	NA	1.95
2006-11	NA	2.23	NA	2.09	NA	1.95
2011-16	NA	2.13	NA	1.97	NA	1.81
2016-20	1.27	1.73	1.63	1.46	2.02	1.17
2020 Labour Demand minus Workforce of 576 Million						
	$\lambda = 0.6$		$\lambda = 0.3$		$\lambda = 0.1$	
Lab Demand –Workforce (million workers)	–20.6		–14.2		–7.5	
Year of Switch to Model 2	2017		2017		2017	
Assumptions						
	Growth NVA (Per Cent)			Employment Elasticity		
Agriculture	3.9			0.3		
Secondary	7.0			0.35		
Tertiary	7.8			0.5		
All sectors	6.5			0.34		

Figure 4: Projected Demand and Supply of Labour to 2020 – Base Growth High Elasticity (Lambda = 0.3)



the period 1973-74 to 1999-2000 were used to derive sectorwise growth rates of net capital stock and net value added. From the above, we calculated arc elasticities between the beginning and endpoints of the data series.

Table 12 gives the parameters assumed for the simulation exercises in the two models. The most difficult parameter to estimate is λ , the supply elasticity of labour with respect to the wage rate. Within a year, the number of workers is assumed to be fixed in the models and the only way that labour supply can respond to changes in the wage arises is through λ . If the wage increases, we postulate that workers will work more days or longer hours and additional people may be attracted into the workforce, even if only on a part-time basis (for example, married women). Since we do not have a good estimate of λ , we tried a number of different but plausible values (0.1, 0.3 and 0.6) in the model simulations.

Simulations on Employment Prospects

Three alternative scenarios for the rate of economic growth of each sector are assumed (Table 12). A *low growth* scenario (5.04 per cent pa growth of NDP) assumes that the national economy returns to the sort of growth rates experienced during 1983 to 1993. The *base-line* growth scenario is largely a projection of current growth rates of about 6.5 per cent pa, and a *high growth* scenario assumes an increased but possible rate of growth of 9.1 per cent pa.⁷

Under the low growth, low employment elasticity scenario (NDP growth rate 5.04 per cent pa; employment elasticity 0.1), India is not able to generate nearly enough employment to keep pace with the growth in the workforce (1.75 per cent pa). By 2020, the projected workforce of 576 million exceeds demand by 44.2 million workers (Figure 2).

This surplus declines to 14.5 million workers in 2020 if the agricultural employment elasticity increases to 0.3. Thus, with the low growth scenarios, there is little prospect of any tightening of the labour market before 2020, implying growing unemployment and a stagnant wage.

Under the base-line scenario, the current growth rate of 6.5 per cent pa is maintained to 2020 with a low employment elasticity

for agriculture (0.1). Again, the demand for labour fails to catch up with the supply of workers and there is a surplus of 10.6 million workers in 2020 (Figure 3). On the other hand, if the base line growth rate is accompanied by a high employment elasticity for agriculture (0.3), then enough employment is generated by 2016 to exceed the size of the workforce (Figure 4).⁸ This leads to an increase in the number of days worked per worker (through λ) and in the wage rate, as summarised in Table 13. For example, if $\lambda = 0.3$, then by 2020 employment exceeds the workforce by 14.2 million job equivalents, and this is supplied by 2.5 per cent increase in the number of days worked per worker over the base year. The wage rate also increases by 1.63 per cent pa after 2016 and labour demand grows by 1.46 per cent pa. Overall, the results for the base-line growth rate are not too encouraging since they show little hope of increasing wage rates for almost another 15 years, and only then if the employment elasticity of agriculture can be increased to 0.3.

The results for the high economic growth scenario are much more favourable. Even with a low employment elasticity and

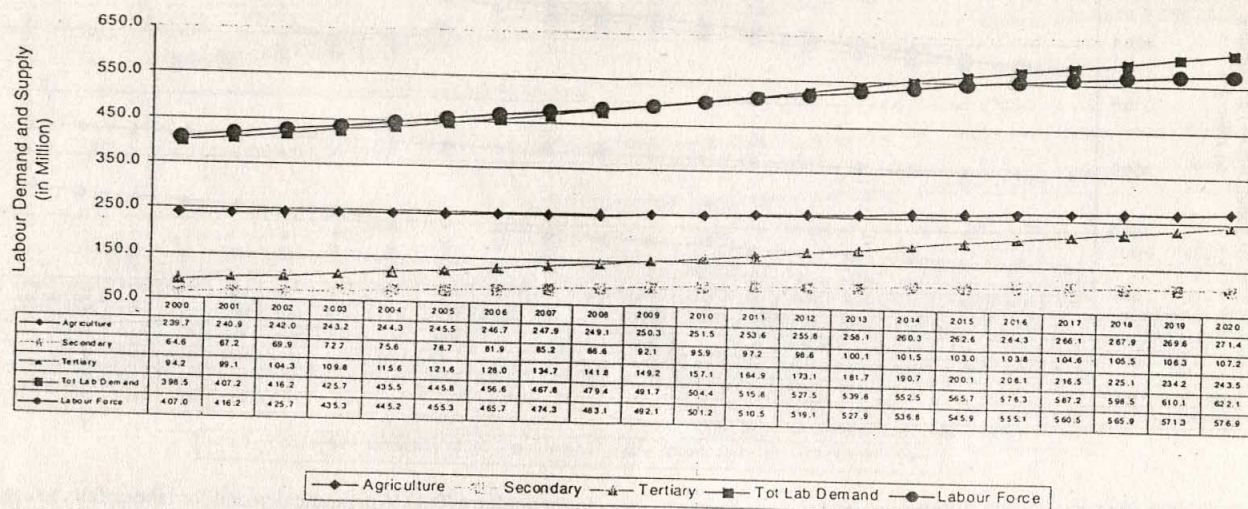
Table 14: High Growth, Low Employment Elasticity

Period	Annual Per Cent Growth					
	Wage		Employ		Wage	
	$\lambda = 0.6$		$\lambda = 0.3$		$\lambda = 0.1$	
1983-2000	1.47	2.18	1.84	2.28	3.19	2.18
2000-06	NA	1.89	NA	1.66	NA	1.67
2006-11	NA	2.42	NA	2.08	NA	2.25
2011-16	1.47	2.67	1.84	2.28	2.07	2.36
2016-20	2.00	2.57	2.53	3.13	1.92	2.24

2020 Labour Demand minus Workforce of 576 million			
	$\lambda = 0.6$	$\lambda = 0.3$	$\lambda = 0.1$
Lab D - Workforce	-68.5	-49.2	-21.3
Year of Switch to Model 2	2011	2011	2011

Assumptions		
	Growth NVA (Per Cent)	Employment Elasticity
Agriculture	4.8	0.1
Secondary	11.5	0.35
Tertiary	10.5	0.5
All sectors	9.1	0.24

Figure 5: Projected Demand and Supply of Labour to 2020 – High Growth Low Employment Elasticity ($\lambda = 0.3$)



$\lambda = 0.3$, employment matches the labour force by 2010 and thereafter the number of days worked per worker and the wage rate rise (Figure 5 and Table 14). In fact, by 2020, employment exceeds the number of workers by 45.2 million job equivalents, and this is made up from an increase in the labour supplied per worker (an increase of 7.8 per cent over the base year). Labour demand grows by 2.28 per cent pa between 2011 and 2016, and then by 3.13 per cent thereafter, while the wage increases by 1.84 per cent and 2.53 per cent pa for the same periods. The demand for labour grows even faster with higher values of λ , reaching an excess demand of 68.4 million job equivalents when $\lambda = 0.6$, but only 20 million if $\lambda = 0.1$ (Table 14). If a high employment elasticity is assumed, then the high growth scenario with $\lambda = 0.3$ leads to full employment by 2004 and an excess demand of 63.1 million job equivalents by 2020 (Figure 6 and Table 15). Employment grows by 2.31 per cent, 2.2 per cent and 1.69 per cent per annum between 2006-2011, 2011-2016 and 2016-2020, respectively, and wages grow by 1.52 per cent, 1.68 per cent and 2.4 per cent, respectively for the same periods. These results are sensitive to the value of λ , and the excess demand reaches 96.6 million job equivalents if $\lambda = 0.6$. With $\lambda = 0.1$, it comes down to 29.3 million job equivalents.

In all the scenarios examined, the fastest employment growth occurs in the service sector, followed by manufacturing and then agriculture. This happens because both the assumed employment elasticity and NDP growth rates are much higher for the service sector compared with other sectors. Given that services are widely distributed between urban and rural towns and rural areas, the results following from the base line and high growth scenarios suggest that employment growth in rural areas and towns should easily exceed the projected growth in the rural labour force. This should lead to some welcome realignment in relative per-worker productivity and wages between rural and urban areas.

To sum up, our projections have tried to capture the implications of excess demand for labour on wages and employment growth. The results show that it will take either higher employment elasticities, especially in agriculture, or higher economic growth before any tightening of the labour market can be expected in the near future. But if national income continues to grow at current or past rates, then the prospects for higher

wages and lower unemployment are not favourable, even up to 2020.

Discussion

The 1990s witnessed an acceleration of GDP growth rates and of per-capita income in India. But simultaneously, there were some important structural changes and disturbing signs on the employment front. The rate of growth of employment fell sharply in all sectors of the economy, particularly in agriculture. Consequently, there was a significant decline in the employment elasticity in all sectors. More importantly, the elasticity of employment in agriculture, which was reasonable high during the period 1983 to 1994 (0.3), plummeted to nearly zero during the 1990s. Although the decline in employment potential resulted in increased labour productivity and wages in all sectors of the economy, there was a visible increase in open unemployment during the 1990s compared with earlier periods.

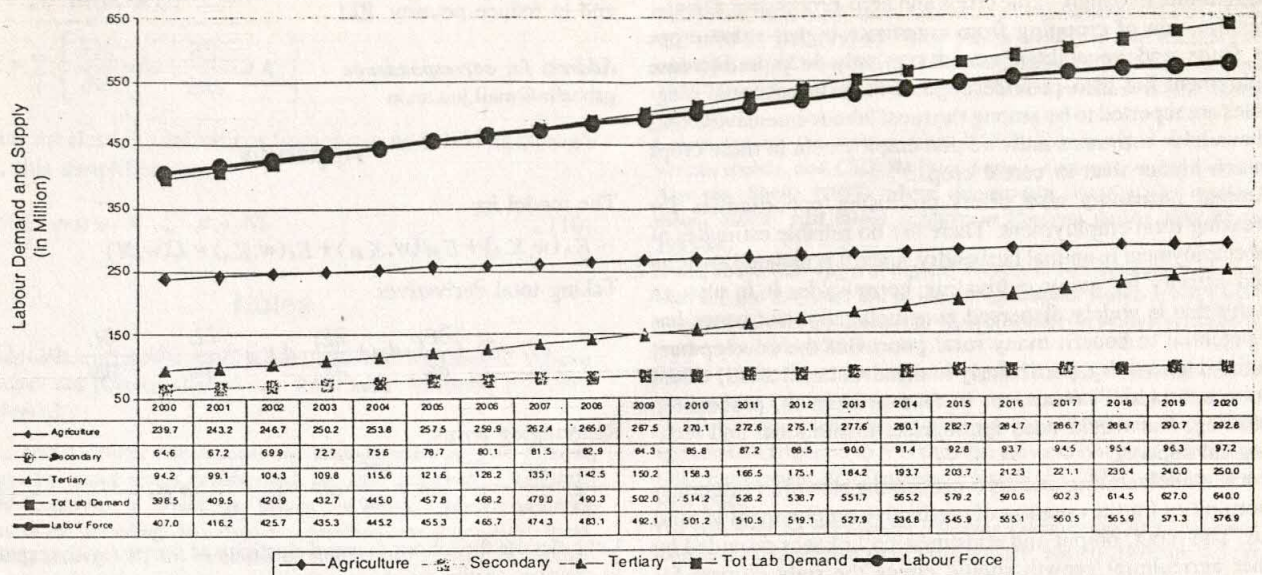
Table 15: High Growth, High Elasticity Scenario

Period	Annual Per Cent Growth					
	Wages		Employ		Wages	
	$\lambda = 0.6$		$\lambda = 0.3$		$\lambda = 0.1$	
1983-2000	1.30	1.98	1.68	1.76	2.10	1.52
2000-06	NA	2.54	NA	2.37	NA	2.18
2006-11	1.17	2.56	1.52	2.31	1.89	2.05
2011-16	1.30	2.47	1.68	2.20	2.10	1.90
2016-20	1.85	2.08	2.40	1.69	3.00	1.27

2020 Labour Demand minus Workforce of 576 Million			
	$\lambda = 0.6$	$\lambda = 0.3$	$\lambda = 0.1$
Lab Demand – Workforce	-96.7	-63.1	-29.3
Year of Switch to Model 2	2006	2006	2006

Assumptions	
	Employment Elasticity
Agriculture	0.3
Secondary	0.35
Tertiary	0.5
All sectors	0.34

Figure 6: Projected Demand and Supply of Labour to 2020 – High Growth High Elasticity (Lambda = 0.3)



As a reaction to this emerging situation, the Planning Commission constituted a task force and then another special committee to find ways of creating productive employment in the economy. These reports have attracted a large amount of attention.

In this paper, we have analysed some of the implications of different scenarios for increasing employment and eliminating poverty over the next two decades. Our analysis shows that India faces a real problem in generating enough employment in the years ahead to keep pace with the growth in the labour force, let alone to raise wages and productivity of the vast majority of workers who are currently engaged in low-productivity and low-paying occupations.

The ninth five-year plan projected that 8-9 million jobs would be generated each year during 1997 to 2002 [Economic Survey 2000]. However, the actual employment growth has been much lower than projected in the plan. The task force was set up with the explicit terms of reference of suggesting strategies of generating one million jobs a year. The main message of the task force was that given the reality of lower employment elasticities, the only alternative for generating more employment is to accelerate the growth of the economy to about 9 per cent pa. The task force therefore suggested accelerating the rate of growth of investment in the economy. It also stressed the need for increasing public investment in agriculture, improving the efficiency of the use of capital and raising resources through increasing user charges for various inputs in agriculture. But the task force was not very optimistic about generating one million extra jobs a year.

The Gupta Committee, on the other hand, recognised that it might not be feasible to accelerate the growth rate of the economy to even 8 per cent pa not to talk of 9.1 per cent pa. The committee therefore suggested changes in investment priorities and giving much more emphasis to the growth of agriculture, in particular in dryland regions of India.

Our analysis has also shown that India faces a tough challenge on the employment front. The challenge lies in tightening the labour market over a period of time. We discovered that with base-line growth (6.5 per cent pa), even with a high employment

elasticity for agriculture, the tightening of the labour market takes place only after 2017. With a low elasticity, there is no tightening of the market at all. On the other hand, with high economic growth (9.1 per cent pa), the labour market starts tightening in 2004 with a high employment elasticity. Even with a low employment elasticity, the labour market starts to tighten after 2010. Accelerating overall growth of the economy is therefore essential to make a meaningful dent on underemployment and poverty.

Accelerating growth to the requisite level would need much higher levels of investment in the economy. Growth will need to permeate all sectors of the economy, but it will be particularly important to promote agricultural growth. Agricultural growth targeted at rainfed areas would likely be most beneficial in terms of raising employment elasticity in the agricultural sector, as well as reaching many of the rural poor who are now concentrated in rainfed areas.

In a country like India, agricultural growth ought to act as an important engine of growth for other sectors of the economy, especially in rural areas [Mellor 1976]. Further, since most farms are small in size, and because much non-farm activity is located in rural areas and small towns, the growth multipliers emanating from agriculture can substantially benefit the poor and lead to more desirable spatial patterns of growth [ibid]. In addition to production and consumption linkages that drive the multiplier, the importance of labour market interactions in inducing a shift in the composition of non-farm activity out of very labour intensive, low-return activities into more skilled, higher investment, higher return activities has also been emphasised by some scholars [Hazell and Haggblade 1991].

To accelerate agricultural growth in rainfed areas, special emphasis should be given to the development of irrigation and other infrastructure through large-scale public investment in some of the currently under-developed and predominantly rainfed states like Andhra Pradesh, Bihar, Madhya Pradesh, Maharashtra, TN, UP and West Bengal. This would not only help to accelerate agricultural growth but increase productive employment and also serve to make a real dent in poverty.⁹

In this context, it is also important to promote diversification of agriculture into high-value crops and agro-processing. Greater diversification of cropping from cereals to higher-value crops like fruits and vegetables would not only help to increase employment but also provide opportunities for exports. Vegetables are reported to be among the most labour-intensive crops, and available estimates indicate that employment in these crops is much higher than in cereal crops.¹⁰

Animal husbandry also offers promising opportunities for increasing rural employment. There are no reliable estimates of total employment in animal husbandry, since it is undertaken as an allied activity by many cultivating households. It is also an activity that is widely dispersed geographically, and hence has the potential to benefit many rural poor. But the development of animal husbandry, particularly in disadvantaged areas, would require substantial investment in feed production, processing, marketing, and would need appropriate institutional and technological support.

Rural manufacturing and agro-processing also offer important opportunities for the creation of productive employment in rural areas. The input, output and consumption linkages provided by higher agricultural growth should create the right climate for fostering these activities. There is considerable scope for expanding this sector through promotional policies and investments in infrastructure at the village and small-town levels.

The tertiary sector is also becoming very important for creating income and employment, both in rural and urban areas. Many important services like banking, insurance, and real estate can only grow in consonance with the growth of the rest of the economy. But many other services, such as consultancies, computer services, insurance, and publishing, are becoming more international and tradable in character, and are less dependent on local or national demand. Expansion of most modern services sectors depends on adequate investments in human resources, such as higher education and health.

Finally, one of the most important areas for generating employment are the special employment and anti-poverty programmes like the Integrated Rural Development Programme (IRDP), training of rural youth for employment (known as TRYSEM), Jawahar Rojgar Yojna (JRY), the Employment Assurance Scheme (EAS) and Nehru Rojgar Yojna (NRY) (now renamed as Swarna Jayanti Shahri Rozgar Yojana). Several state governments are also running anti-poverty schemes. Till recently, many of these schemes were able to generate significant employment. For example, during 1996-97, the JRY and the EAS programmes in rural areas created 4,006 million and 4,030 million man-days of additional employment, respectively, and NRY in urban areas created 44.6 million man-days of employment. However, by 2001, the employment generated by JRY and the EAS in rural areas was only 268.32 and 217.49 million man-days. In urban areas, the PMRY only generated 0.6 million man-days. This is because over the years the amount of spending on these programmes has been reduced because of fiscal difficulties [*Economic Survey* 1997-98 and 2001-02].

A mix of policies aimed at: (i) accelerating the rates of sectoral and national economic growth; (ii) reversing the trend of deceleration of agricultural growth and public investment in agriculture; (iii) promotional policies for labour-intensive and higher income generating allied agricultural and non-agricultural activities in rural and urban areas for domestic and export markets; and (iv) diversification of agriculture towards hitherto neglected dryland central and eastern regions, has the potential to lead to

an appreciable acceleration in agricultural and rural employment, and to reduce poverty. [27]

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Appendix

The model is:

$$E_A(w, K_A) + E_M(w, K_M) + E_S(w, K_S) = L(w, N)$$

Taking total derivatives

$$dE = \sum_i \left(\frac{\partial E_i}{\partial w} \cdot dw + \frac{\partial E_i}{\partial K_i} \cdot dK_i \right) = \frac{\partial L}{\partial w} \cdot dw + \frac{\partial L}{\partial N} \cdot dN \quad \dots(1)$$

Rearranging terms,

$$\left[\sum_i \frac{\partial E_i}{\partial w} - \frac{\partial L}{\partial w} \right] dw = \frac{\partial L}{\partial N} \cdot dN - \sum_i \frac{\partial E_i}{\partial K_i} \cdot dK_i \quad \dots(2)$$

Let e_i denote the labour demand elasticity of sector i with respect to changes in the wage rate; then

$$e_i = \frac{\partial E_i}{\partial w} \cdot \frac{w}{E_i}, \text{ or } \frac{\partial E_i}{\partial w} = e_i \cdot \frac{E_i}{w} \quad \dots(3)$$

Let λ denote the supply elasticity of labour with respect to the wage rate, then

$$\lambda = \frac{\partial L}{\partial w} \cdot \frac{w}{L}, \text{ or } \frac{\partial L}{\partial w} = \lambda \cdot \frac{L}{w} \quad \dots(4)$$

Also, let μ_i denote the elasticity of employment of sector i with respect to a change in the stock of capital; then

$$\mu_i = \frac{\partial E_i}{\partial K_i} \cdot \frac{K_i}{E_i}, \text{ or } \frac{\partial E_i}{\partial K_i} = \mu_i \cdot \frac{E_i}{K_i} \quad \dots(5)$$

Substituting (3) to (5) into (2),

$$\left[\sum_i e_i \frac{E_i}{w} - \lambda \cdot \frac{L}{w} \right] dw = \frac{\partial L}{\partial N} \cdot dN - \sum_i \mu_i \cdot \frac{E_i}{K_i} \cdot dK_i \quad \dots(6)$$

rearranging, and dividing through by E ,

$$\sum_i e_i s_i \dot{w} - \lambda \left(\frac{L}{E} \right) \dot{w} = \frac{\partial L}{\partial N} \cdot \frac{N}{E} \cdot \dot{N} - \sum_i \mu_i s_i \dot{K}_i \quad \dots(7)$$

Note that since the market clearing condition requires $L=E$ at all times, then $L/E = 1$. Moreover, $N/E = N/L$, which is the inverse of the labour supplied per worker. We denote this ratio by α . Finally, if we assume that α remains constant over short periods of time for a given wage rate (that is, L is a linear function of N), then $\partial L / \partial N = 1/\alpha$. Substituting these assumptions into (7), one obtains:

$$\left(\sum_i e_i s_i - \lambda \right) \dot{w} = \dot{N} - \sum_i \mu_i s_i \dot{K}_i \quad \dots(8)$$

Solving (8) for \dot{w}

$$\dot{w} = \frac{\dot{N} - \sum_i \mu_i s_i \dot{K}_i}{\sum_i e_i s_i - \lambda} \quad \dots(9)$$

Once \dot{w} is known, it can be used to project the employment for each sector. Since

$$E = \sum_i E_i(w, K_i),$$

$$dE = \sum_i \left[\frac{\partial E_i}{\partial w} \cdot dw + \frac{\partial E_i}{\partial K_i} \cdot dK_i \right]$$

Using the elasticity definitions from above, and dividing through by E, this simplifies to:

$$\dot{E} = \sum_i \epsilon_{iS} \dot{w} + \sum_i \mu_{iK} \dot{K}_i \quad \dots(10)$$

Notes

[Revised version of paper prepared for the IFPRI-IDC Workshop on 'Policies for Growth and Poverty Alleviation in Rural India' November 8-9, 1999, Chandigarh.]

1 The NSSO defines employment and unemployment in four different ways. For usual status employment, the time reference is 365 days and the activity in which the person has spent a relatively longer time of the preceding 365 days is considered usual principal status (UPS) activity. If, in addition, he spends some time in another activity, it is called subsidiary status activity and the two together are called usual principal and subsidiary activity status (UPSS). Current weekly status (CWS) refers to the activity during the preceding week. If a person was working or seeking work for at least one hour in any one of the previous week, he is considered either employed or in the labour force. In the current daily status (CDS), a person is considered working for the whole day if he worked for more than 4 hours during the day, working two days if he worked one hour or more in a day. The aggregate of person days classified under the different activity categories for all the seven days give the distribution of person days by activity category during an average week over the survey period of one year.

All employment figures refer to usual principal and subsidiary status (UPSS), unless stated otherwise. The figures for usual principal status (UPS) are also given in tables.

2 The estimates of GDP from any agricultural sector are based on the estimated value of output netted for inputs. The estimates of area and output of principal crops is based on area statistics collected by the revenue authority and yield statistics based on 5,00,000 crop-cutting experiments. Although the National Statistical Commission (NSC) has pointed out some deficiencies and has suggested measures to correct these, by and large these statistics are fairly reliable. Till 1993-94, the data on horticultural crops (fruits and vegetables) were provided by the Directorate of Economics and Statistics, ministry of agriculture, based on a centrally sponsored scheme in 11 states. In 1993-94, the CSO decided to abandon this source and to take data directly from the National Horticultural Board (NHB), which is based on reports furnished by the state directorates of horticulture and agriculture. According to NSC, 'The estimates furnished by the NHB relate to the entire country but they are of doubtful reliability being essentially based on subjective reports received from the ground-level staff'.

That the output and value added estimates of fruits and vegetables are highly exaggerated is also brought out by a comparison of NSS data on consumption and production figures for vegetables and fruits by the NHB. It comes out that the given output of vegetables and fruits in 1999-2000 was 134.83 times and 258 percent times the NSSO estimates of consumption for the 55th round (1999-2000).

3 The relationship between rate of growth of agriculture and employment therein is fairly well expressed by Ishikawa's rectangular hyperbola hypothesis which postulates near unity elasticity of employment with respect to agricultural output in traditional agriculture in many Asian countries over a long period. But over time, this relationship has undergone a significant change as higher output and yields are increasingly achieved through application of capital and other non-labour inputs. See, Ishikawa (1967).

Bhalla and Singh (2001) have calculated elasticities of employment for agriculture by using cross-section district-level data for 1962-65, 1970-73, 1980-83 and 1992-95. Their results show that the elasticity of employment per hectare declined from 0.73 during 1962-65 to 0.66 during 1970-73 and further to 0.58 during 1980-83 but remained at 0.59 during 1992-95.

4 Calculated by the authors from NSSO, *Survey on Employment*, various rounds, and CSO, *National Income Accounts*, various issues. Also see, Sheila (1997), where she brought out that the employment elasticity had turned negative in Haryana during 1987-88 to 1993-94.

5 It was found that wages of regular workers in non-agriculture were at least 2.7 and 2.4 times that of regular agricultural workers, and casual non-agricultural workers received 40 per cent more than casual agricultural workers in both 1977 and 1983.

6 Bhalla (1999), found that wages of regular workers in non-agriculture were at least 2.7 and 2.4 times that of regular agricultural workers, and casual non-agricultural workers received 40 per cent more than casual agricultural workers in both 1977 and 1983. Also see: Planning Commission 1990, *Employment, Past Trends and Prospects for 1990s*, working paper, New Delhi.

7 The task force on employment [Planning Commission 2001] has made three assumptions about growth rate of GDP, namely, base-line 6.5 per cent p.a., high 8.0 per cent p.a. and rapid 9.1 5 per cent p.a.

8 Note that the switch from model 1 to model 2 is therefore undertaken at 2017.

9 Planning Commission, *ibid* p 10. State-level data indicates that the employment elasticity of irrigation is as high as 0.38. Field studies from AP, Orissa and Karnataka indicate that an irrigated hectare uses 50 to 150 times more than an unirrigated hectare.

10 It has been estimated that in the HP and UP hills, apple cultivation requires 180 and 170 man-days per hectare and for mango the man-days required per hectare are 355 in Gujarat, 124 in Maharashtra and 91 in UP and so on [Bhalla 1994].

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SAVINGS AND CREDIT MOVEMENT IN ANDHRA PRADESH

Participation of Rural Women

Dr. H.D. Dwarakanath

Andhra Pradesh government has made a pioneering effort in community organization and monitoring the Self Help Groups Action Plan in which rural women are largely involved. Women participation in the savings and credit movement has paved the way for the speedy development of economic and productive activities. This movement helped in bringing other institutions like commercial banks, NGOs and other micro-finance organizations for the upliftment of rural women. Another important factor which contributed towards the rapid expansion of savings and credit groups in Andhra Pradesh, is the collective participation of various organizations and credit institutions.

Poverty has been one of the persisting social evils haunting the rural masses in India. It has also remained the biggest challenge in India's development efforts to bring about a perceptible change in the quality of life of its teeming Millions. A large chunk of the rural masses are living below the poverty line and the task of uplifting them has become the constitutional responsibility of the Union, State and Local Governments. India, being a developing country, a vast section of its population suffers from malnutrition, unemployment, illiteracy and

poor Health care. This is particularly more in case of four main weaker sections and society namely, Women, Children, Scheduled Castes and Scheduled Tribes.

Ever since independence, a number of innovative schemes have been launched for the upliftment of rural women in our country. There has been a perceptible critical agent for socio-economic development. Now, the emphasis has shifted from development to empowerment. The government of India has taken up the task of Women's Empowerment as one of the main agenda items to



Table 1 : Spread of Savings and Credit Groups in Andhra Pradesh

Year	Districts covered
1982-83	Srikakulam, Cuddapah, Adilabad
1986-87	Mahabubnagar, Ananthapur
1988-89	Medak, Vishakhapatnam
1989-90	Prakasham
1990-91	Karimnagar
1991-92	Nellore, Nizamabad, Kurnool
1992-93	Chittur, Nalgonda, Karimnagar
1993-94	Khammam, Ranga Reddy,
1994-95	East Godavari, West Godavari, Krishna and Guntur

Source : Commissioner, Ministry of Rural Development, Govt. of Andhra Pradesh

tackle rural poverty and socio-economic issues. The development agenda of the country in the last few years has been to place the poor, especially the rural women, in the forefront, which has facilitated the formation of a large number of Self Help Groups (DWCRA Groups) in Andhra Pradesh.

Twentieth century witnessed large scale conscious efforts and social change to improve the quality of life of the disadvantaged sections of the population. It was recognized that, the poor are caught in a poverty trap due to inadequate savings leading to low capital formation resulting in stagnant real income levels. To break out of this cycle, investable capital needs to be made available to the poor in credit, possibly without seeking collateral security. However, some innovative efforts in Bangladesh and Indonesia demonstrated that it was possible to extend financial services to the

Table-II: Progress of Self-Help Groups in Andhra Pradesh (1993-2002)

No of SHGroups	No of Women Members	Population covered	Amount Saved by SHG	Loan availed from the Govt
4.75 lakhs	56 lakhs	3 crores	16 crores	860 crores

poor if :-

- Banking made easy for them with simplified procedures.
- Attention is paid to reducing transaction cost for both the borrower and the lender.
- Repayments are fixed to fit cash flow of the borrower
- Small sums are collected at regular intervals than paying a large sum at any one point of time.

This led to the emergence of the Micro-Finance interventions throughout the world as a savings and credit

movement. Thus, organization of women around thrift and credit services emerged as one of the effective methods for empowerment of women and eradication of poverty. Some of the well known banking institutions involved in such organization include the Grameena Bank and BRAC of Bangladesh and Jana Shakti Bank of Sri Lanka. In our country, Andhra Pradesh Government has laid the foundation in the formation of Self Help Groups which is a voluntary Non-governmental Machinery.

Evolution of Self Help Groups in Andhra Pradesh

Self Help Groups (DWCRA

Table-III: Administrative Structure of Self Help Groups – State Level Agency

Official Members	State Level	Ministry of Rural Development	Non-Official Members
		Member/Secretary	
		Joint Secretary	
		Department of Rural Development & Ministry of Panchayat Raj	
		State Level Coordination Committee	
Official Members	District Level	Chairman	Non-Official Members
		Member/Secretary	
		District Level Development Agency for each District	
		District Collector/Chairman	
		Zilla Parishad Chairman(Vice Chairman)	
Official Members	Mandal Level	Member of Governing Body	Non-Official Members
		Project Director (DRDA)	
		Assistant Project Director (DWCRA)	
Official Members	Village Level	Mandal Level Organization	Non-Official Members
		Village Level Organization, Self Help Group Leader	

Groups), as a sub-scheme of Integrated Rural Development Scheme (IRDP), started in Andhra Pradesh in 1982-83 with UNICEF cooperation with the primary objective of focusing attention on the women members of rural families living below the poverty line with a view to generate self employment on a sustained basis. The savings and credit movement gathered momentum in 1993 in Nellore district. The women in this district had been organized into Mahila Mandals during Total Literacy Campaign (TLC). Subsequently, these groups spearheaded 'Anti-Arrack' (abolition of country liquor) movement. The movement was successful and spread to neighbouring districts, eventually leading to imposition of prohibition in the state. Later, the movement converted into savings and credit groups known as 'Podupu Lakshmi'. There has been a phased expansion of DWCRA Self Help Groups in the districts and by the year 1994-95, these groups were extended to all the villages in the state covering 22 districts and 1100 mandals.

Self Help Groups through savings has been adopted as a mass movement by the rural women, a path chosen by them, to shape the future destiny. The World Bank Micro Credit Summit held in Washington (2001-02) has agreed that Women's Self Help is one of the most important schemes to tackle socio-economic poverty. According to one estimate, out of 10 million women in the world who are carrying on thrift activity, 2 million are in Andhra Pradesh itself. In this current year, (2002-03), efforts are being made to cover every eligible Self Help Groups under DWCRA. In addition to these efforts, Department of Women and Child Welfare also covered 4000 groups under income generating activities scheme and spent Rs. 1400 crore assisting 60,000 women beneficiaries. Socio-economic

survey of such groups conducted by District Rural Development Agency has indicated that DWCRA scheme helped the women to earn additional monthly income ranging from Rs.2500 to Rs.20000 per month depending on the income generating activities. Rural women in Andhra Pradesh have taken initiative in improving their socio-economic status by participating in government programmes such as family welfare, promoting their nutritional and educational status, awareness on environment, public health, through sanitation and clean drinking water, etc.

About 56 lakh rural women in the state of Andhra Pradesh, covering a population of 3 crore, have become members of Self Help Groups to generate self employment activities. Today, there are about 4.75 lakh Self Help Groups working in the state with the main objective to improve the economic status of Rural Women and their Children.

With government support, particularly with the network of District Rural Development Agency (DRDA) and support from many active District Collectors, the women's savings and credit network is now widespread in Andhra Pradesh, Rayalaseema and Telangana regions. These groups are known by different names in various local savings groups for example Podupu Lakshmi in Nellore and Kurnool districts. Anantha Mahila Sakti (Anantapur), Mahalakshmi (Mahabubnagar), Podupu Jyothi (Ranga Reddy), Samabhavana (Nalgonda), Pragati Lakshmi (Nizamabad), Grama Lakshmi (Chittoor) and, Mahil Sakthi (East Godavari)

Promotion of Savings and Credit Groups

The District Rural Development Agency in most of the districts are actively involved in transforming DWCRA (SHGs) into savings and

Table IV: Total assistance provided to Savings and Credit Groups in Andhra Pradesh (1993-2002)

Total No. of Self Help Groups	4.75 lakhs
Total advances to women groups	880 crores
Savings mobilized through Self Help Groups	1600 crores
Total Corpus fund released	640 crores
Total No of women groups benefited	2.10 lakhs
Total No of Women benefited	26.5 lakhs

Source : Ministry of Rural Development and Panchayati Raj, Government of Andhra Pradesh - 2002

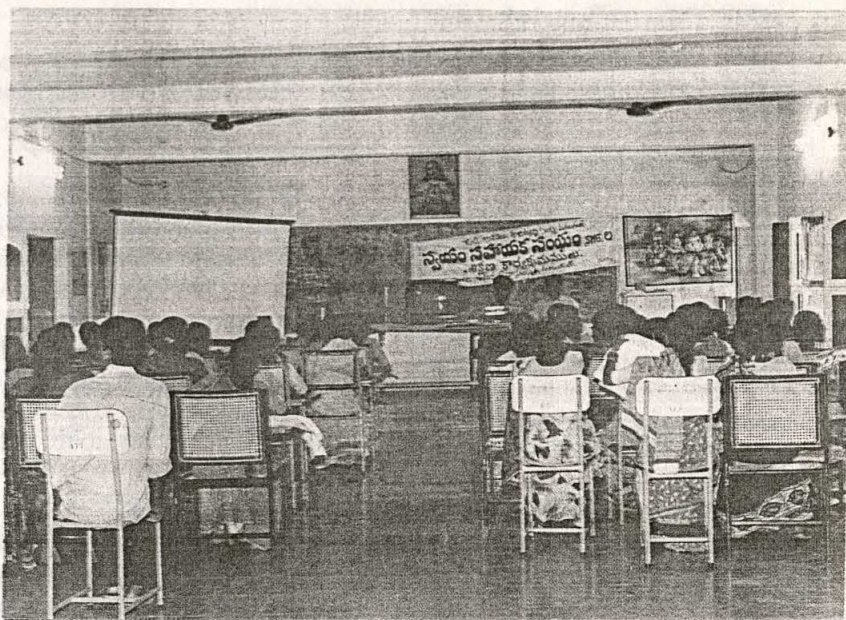
credit groups of women to generate self employment opportunities. Many district administrative machineries have taken steps towards continuing support and strengthening DWCRA groups. In Srikakulam and Nellore districts, the DRDA and NABARD are jointly conducting training programme for group leaders and Bank Managers. Ranga Reddy is the second largest district in the state next to Nellore to popularize empowerment of Rural women in generating self employment through economic activity under thrift deposit mobilisation scheme. About 12309 Self Help Groups with 1,72,000 women members in Ranga Reddy have deposited Rs. 53.37 crore as corpus fund by 31st March, 2002. The Self Help Groups in Ranga Reddy district had the rare distinction of appreciation of world leaders including Mr.Bill Clinton, former President of U.S.A., Mr.Kofi Annan, Secretary General of U.N.O. who described the savings and credit system of self help groups as a great revolution in Andhra Pradesh in bringing socio-economic transformation among the rural- women groups. In Nalgonda district, the DRDA has

promoted nearly 2,800 groups in just two months. In Cuddapah district, the DRDA has planned to promote 100-150 village level MACTS, and enrolled 3000 new groups and provided necessary toolkits to women. The state government has specially established South Asia Poverty Alleviation Programme (SAPAP) operating in the following districts of Andhra Pradesh namely Ananthapur, Kurnool and Mahabubnagar. It has promoted over 2700 groups covering over 42000 villages. A village organization has been formed at each village, where all the groups in village have been federated. All the village organizations have been federated on Mandal Samukhyas at the mandal level.

The evolution of NGOs as financial intermediaries has been the growing trend over the past few years. Some NGOs have accessed loan from the Rashtriya Mahila Bank (RMB) and had advanced loans to women groups. Such NGOs in Andhra Pradesh include Youth Charitable Organization (YCO) and Vishakhha Zilla Nava Nirmana Samithi (VZNNS) Gramasiri, CARDS and ASSIST in Guntur, Youth Club, Bejjipuram and SVCT in Srikakulam district, RASA and PODA in Chittoor and multi-purpose social service society in Cuddpah district. Apart from these, SHARE, which is a Grameena Bank, is the biggest NGO retailer operating in six districts with an outstanding advance of Rs. 9 crore by September 1999, with 100 percent repayment rate. Its members savings amount is around Rs. one crore. Similarly, St Ann's Social Service Society, Vishakhapatnam and Swayamkrushi Sangam in Narayankhed in Medak district are also replicating the Grameena Bank model.

Revolving Fund to Self Help Groups:

The state government, under the



A large number of women participants in government sponsored programmes are active partners in generating employment to earn their livelihood. The state government, however, worked out special programmes for the sustenance of these groups through a number of training programmes, exposure visits and regular capacity building programmes. The skill level of these groups is being monitored on a quarterly basis to plan out improved and more effective programmes to support these groups. Sustainable flow of additional monthly income of the Self Help Groups is a key for the women groups to move forward.

Ministry of Panchayati Raj and Rural Development, is making all efforts to assist the Self Help Groups by providing revolving fund under DWCRA. An amount of Rs. 360 crore was provided as a revolving fund as against savings of Rs. 1600 crore by the self help groups. It is a paradoxical truth that nearly 40 per cent of the total Self Help Groups in the country are from Andhra Pradesh only. During early 90's, 10000 groups have been formed and in the last decade there is a rapid increase in the Self Help Groups. Nearly 3 lakh additional women groups have been formed in the state every year.

The socio-economic survey of such groups conducted by the District Rural Development Agency (DRDA) has indicated that Self Help

Groups helped the women beneficiaries to earn additional monthly income of Rs. 250-2000 per month depending on their enterprise, and activities taken up by them.

A large number of women participants in government sponsored programmes are active partners in generating employment to earn their livelihood. The state government, however, worked out special programmes for the sustenance of these groups through a number of training programmes, exposure visits and regular capacity building programmes. A benchmark survey reveals that the skill level of these groups is being monitored on a quarterly basis to plan out improved and more effective programmes to support these groups. Sustainable

flow of additional monthly income of the Self Help Groups is a key for the women groups to move forward.

Methodology of Lending Loans

The empowerment of women in Andhra Pradesh through organizing savings and credit took a form of social movement. A very large number of groups have been created in this process of lending of loans to rural women to generate self employment. It may be noted that all these groups do not adhere to a single methodology. Though most of those SHGs have retained the basic features of micro-finance, they have significant elements of diversity in their design. As it evolved in different places under the initiative of different agencies responding to the needs of the local context, different workable methodologies were incorporated in these groups.

a. *Legal Methodology*: This methodology is popularly known as Self Help Group methodology. Groups comprising of 15-20 women from early homogenous socio-economic background who know each other and have frequent interactions with each other. They meet periodically (once in a fortnight) and each member contributes a specified amount to the common pool. Usually, SHGs elect a President, Secretary and a Treasurer and they maintain the books of account and minutes. Once the monthly thrift contributions add to a reasonable amount, the SHG members start lending loans to their members. The decision is taken collectively based on the need, repayment capacity and the availability of funds. In case, the members need more money than the thrift amount accumulated by them they try to get the funds from various external sources such as specialized micro-finance lending agency, or the government departments, DRDA, Commercial Banks, or non-banking organizations like BASIX. Due to the

effectiveness of legal methodology, Self Help Groups have been encouraged to undertake thrift and credit activities.

b. *Group Guaranteed Lending*: The second methodology known as group guaranteed individual lending is also used widely by Mahila Vikas Mutually, Aided Cooperative Thrift Society (MACTS) popularly known as Mahila Bank, similar to Grameena Bank, Bangladesh style and the BASIX which uses joint liability groups of four to six members.

c. *Individual lending*: In the third methodology, individual lending without any joint security is used by non-commercial bank like BASIX to extend loans upto 50000 to farmers, and non-farm producers.

Sources of Funds and Resources

In a contemporary social system, the savings and credit groups in Andhra Pradesh have command over a sizable volume of resources. As these groups are not part of a single large organization, there are considerable difficulties in consolidating the total funds handled by these groups. But, an estimate indicates that it could be a fund of Rs. 1600 crore which is available with Self Help Groups of Rural women in Andhra Pradesh. The following are the main sources of funds for these

groups;

- Own funds including their savings interest accumulated there on service charges and other collections of the group.
- Government grants or matching contributions to the revolving fund from DWCRA/IRDP and other agencies.
- Loans from Banks, including Regional Rural Banks, Commercial Banks, Appex Financial Institutions like NABARD, SIDBI, HUDCO through NGOs.
- Combination of grants and loans from Donor Agencies like ox FAM, Action Aid and UNDP, etc.

Even with a conservative estimate of Rs. 10,000 per group with those 2000000 units, the Self Help Groups in Andhra Pradesh could save Rs. 200 crore under the thrift movement. In addition, about 150 crore have been given to these groups as a revolving fund by the government, in addition, the commercial banks have financed as a loan component to the extent of Rs. 20 crore like specialized institutions like RMK has invested about Rs. 24 crores. These funds easily add upto Rs. 400 crore which is at the disposal of about 5 lakh women in the state. This large scale of savings is helping the rural women to generate

Table-V: Women Groups Action Plan. Government Assistance to Self Help Groups in Andhra Pradesh (Period 1993-2002)

Scheme	Coverage of SHGs	Women beneficiaries (lakhs)	Revolving Marginal Grant (crores)
Working Capital Assistance	160382.00	18.56	360.00
Marketing Grant	68127.00	10.22	216.00
SHG's support under SGSY - 20%	64562.00	12.47	64.00
Group Loans	86386.00	8.64	66.34
SHG's Scheme of NABARD	48674.00	1.51	32.30
Total	428131.00	51.40	738.64
Source : Ministry of Panchayati Raj & Rural Development, Government of Andhra Pradesh - 2002			

self employment activities to achieve socio-economic development in rural areas.

Mutually Aided Cooperative Thrift Societies (MACTS)

The Andhra Pradesh government introduced (Women Cooperative Credit Banks) Mutually Aided Cooperative Thrift Societies in support of people's organizations recognizing the need to be free from government control. Andhra Pradesh has made pioneering effort and enacted a highly progressive cooperative legislation entitled as 'The Andhra Pradesh Mutually Aided Cooperative Societies Act - 1995. This act breaks new ground in the history of Indian cooperative movement. This act envisages to promote self reliant and autonomous cooperative societies and make the cooperative movement more vibrant in the state of Andhra Pradesh. On 4th May, 1995, the State Assembly passed a historic legislation restoring member control to all cooperatives which do not hold government share capital. This enactment is an act of political courage and wisdom by the government with a new cooperative environment in the field of rural credit and savings. The MACTS made a good beginning in the state to help the rural women living below the poverty line. Cluster villages combined together to become a cooperative society with elected Board of Directors.

Salient Features of MACTS:

The salient features of the Andhra Pradesh Mutually Aided Cooperative Societies Act - 1995 are as follows;

- a. To encourage the cooperative principles which primarily place an accent on voluntarily Self financing autonomous bodies free from state control, provides 100% functional autonomy in relation to business operation.
- b. To enable the cooperatives to regulate their functioning by

forming by-laws subject to the provisions of the Act in various matters specified in the legislation.

- c. To enable the cooperatives to mobilize their own funds.
- d. To provide for Constitution of Powers and Functions of the Board of Directors.
- e. To provide proper accountability and for that purpose to conduct Audit, Special Audit, Inquiry and the recovery of loan.

State control provides 100% functional autonomy in relation to business operations.

1. To enable the cooperatives to regulate their functioning by forming by laws subject to the provisions of the Act in various matters specified in the legislation.
2. To enable the cooperatives to mobilize their own resources and funds.
3. To provide for constitution of powers and specific rules and regulations to discharge the functions of the Board of Directors.
4. To provide proper accountability to conduct audit, special audit enquiry and the recovery of loss caused to the society by misconduct.
5. To provide necessary provision for the immediate settlement of disputes among the Self Help Groups and the cooperatives.
6. To make cooperative societies responsible to hold elections and to regulate the process.

Thus, the act is very useful for thrift and credit cooperative societies in Andhra Pradesh. There are about 1560 mutually Aided cooperative thrift societies in Andhra Pradesh as on March, 2002 out of which, 503 were thrift cooperatives.

SHG's Action Plan (2000-2002)

A critical study of the research topic reveals that Andhra Pradesh government has made a pioneering effort in community organization and monitoring the Self Help Groups Action Plan in which rural women are largely involved. Women participation in the savings and credit movement has paved the way for the speedy development of economic and productive activities. This movement helped in bringing other institutions like commercial banks, NGO's and other micro-finance organizations for the upliftment of rural women. Another important factor which contributed towards the rapid expansion of savings and credit groups in Andhra Pradesh, is the collective participation of various organizations and credit institutions. The institutions such as UNDP have been able to work in close collaboration with the state government. DRDA and Non-Government Organisations such as, Adarsh Welfare Society in Mahabubnagar in Telangana region. Thus, the UNDP has laid a significant emphasis on the development of the human resources at all levels.

Interestingly, several forums for interaction between the collaborating agencies have been created involving several lakhs of rural women and multiple agencies which is really a great revolution in the upliftment of women groups in Andhra Pradesh.

SHG'S Marketing & Sales Exhibition

Recently(2001-02), the state government has taken special efforts to assist these women groups in marketing their products without any middlemen. In the last three months, Rs. 1.50 crore worth DWCR products were sold by the women. These melas provided an opportunity for the women to expose their products to the urban consumers and to un-

derstand customers' choice in a competitive market environment. Similarly, DWCRA Bazars are being set up in several districts to replicate these initiatives at the district level. DWCRA Bazars taken up in Guntur, Khammam, Ranga Reddy, Nellore, Hyderabad and other districts were successful and encouraging. It is also planned to establish a marketing outlet at Hyderabad exclusively for the sale of DWCRA products to provide an opportunity for the women groups coming from remote rural areas. Apart from this, technical resource centre (TRC) is also planned in each district which will act as a Resource Institution for conducting the studies on the existing potential of skills and assess the need for new technologies.

Recently conducted research experiments by different organizations in Andhra Pradesh reveal that the innovative technologies for women have been found to be very encouraging. There is a need to train the rural women in better packaging technology. There is a need to improve designs and new material in addition to providing marketing support. Training for capacity building of women will be taken up by organizing training for women in Mahila Pranganam and other local institutions in every district.

Similarly, the District Rural Development Agency has identified 6000 cluster volunteers to support the groups at the village level. These volunteers were selected by the DWCRA/SHG in the villages and their expenditure is borne by them. The cluster volunteers, DWCRA group leaders, Additional Grama Sevikas, Lady VDO's and others will be trained in the District Training Centres. Thus, greater support will be provided to the DWCRA/SH groups by dovetailing poverty eradication programmes like IRDP, Food for Work, Drought Relief, etc. It is planned to provide atleast 50% of

IRDP subsidy and credit to the women groups through CMEY, SC Corporation, Minority Corporation by covering them under group loans.

An Appraisal

The rural poor with the intermediation of voluntary organizations join together for self help to secure better economic growth. This has resulted in the formation of a large number of self help groups in Andhra Pradesh which mobilize savings and recycle the resources generated among members. Most of the Self Help Groups in the state have come up due to the dynamic leadership of some individuals within a group through the catalytic role played by the NGOs in developing such groups.

It is a paradoxical truth that women led SHGs in districts like Nellore, Vijayanagaram, Chittoor, Ranga Reddy, Karimnagar and Nalgonda have achieved success in bringing the women to the mainstream of decision making. SHGs have also organizational set up to disburse micro-credit to rural women and encourage them to enter into entrepreneurial activities. The women groups working under DWCRA in Andhra Pradesh have successfully demonstrated how to mobilize and manage thrift, appraise credit needs to maintain linkage with the banks and enforce financial self discipline.

This research study of participation of Self Help Groups in Andhra Pradesh reveals that women groups in different districts and mandals are continuously striving hard for a better future for rural women by enhancing the status of women as participants in the domestic economic social and cultural spheres of life.

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This again has been made possible by the advances in Information and Communication Technologies (ICTs) as a result of which various business office processes are being shifted out, a shift of which India is now taking advantage. Again, this is not a temporary lay-off, as used to happen in earlier business cycles. This is a shift of the location of parts of office activities. The increase in recruitment of IT professionals and even telephone call handlers in India is mirrored by lay-offs in the advanced countries. Thus, even while or rather because there is a recession or stagnation in the US, Europe and Japan, there is a boom in business office and information processing units coming up in India.

In this note we have focused attention on the factors in the metropolitan countries themselves that push for capital investment and the shift of whole areas of manufacturing outward. The stability of capitalism in the metropolitan countries depends on the expansion of capitalism. There are other forces developing capitalism in the former third world, forces that are critical in the overall dynamic of capitalism, including that of the relation of primary goods producers to capitalism. But these forces have not been analysed here. The development that is important

here is the capacity of these countries to take up manufacturing, office and other processes.

There are many attempts to analyse the dynamic of capital accumulation in the metropolitan countries (or imperialist centres). But the connection with the rest of the world is not merely as suppliers of primary commodities or as markets for finished goods. It would be necessary to add the tendency to spread capitalist production outside the metropolitan centres, both in the export of capital as machinery and capital equipment, and in the current globalisation of production processes.

What this means for the metropolitan countries is that the route of waiting for the revival of consumer demand or stimulating demand through government deficits will not be as effective as it might have been before decolonisation and second world war. With the development of local capacity in the rest of the world, recession in the metropolitan countries, by increasing the emphasis on cost-cutting to raise margins in the struggle for market share, intensifies the tendency to shift whole sections of manufacturing and even office processes to cheaper locations, thus lengthening recession and weakening recovery. [27]

parlance, for example, caste, marriage, or social configuration of a conventional village; second, state-sponsored institutions – credit cooperatives, banks, the panchayat system, governance mechanisms – and finally, modern popular people-centred institutions like self-help groups, NGO-promoted and other spontaneously organised groups, specifically by urban communities.

At times, modern institutions are set up to replace outdated ones (a village panchayat to replace a caste panchayat). At other times, they are set up (or get simultaneously established) to meet the emerging needs of the time (a village water committee is a typical case). Clashes of interest between the principles and functioning of one institution with another are not uncommon. In many instances, modern institutions prevail over traditional ones and this is the classical position found in established literature. A typical example is a market system replacing a barter trade system. At other times, modern institutions get co-opted into the traditional ones; for instance, it is not uncommon to see a modern electoral representation being co-opted by the caste system. The successful establishment and functioning of any institution is critically dependent upon the social, political and economic support it gets at its commencement. In well-entrenched and 'slow to change' societies like those in India, it requires political will to modernise and/or completely transform traditional institutions. Often this is lacking.

The seminar was conceived to adjudge the direction of change in existing social institutions and the newer ones established in post-independent India. While no effort has been made to measure the quality of life per se, in the sense that there was no causality established between changes in institutions and the quality of life, it was implicitly assumed that right direction and efficient functioning of (modern) social institutions should ensure a better quality of life for the people at large.

The seminar attempted to answer the following questions:

- How have social institutions evolved and shaped in the post-independence period?
- What impediments come in the way of forming effective social institutions, sectorally or otherwise, in the country?
- What can be done, by way of public policy or action, to scale up the quality and effectiveness of social institutions?

The third objective was relatively less touched upon in the seminar. The sectoral institutions explored include economic institutions (such as credit), spontaneous people's groups (self-help groups), social institutions (mainly the existing sociological institutions), decentralised governance

Social Institutions and Development Challenges

A recent seminar in Mumbai attempted to adjudge the direction of change in existing social institutions and those established after independence, as well as the obstacles to forming effective social institutions in the country. In spite of the disheartening picture that emerges, of an iniquitous process in terms of development and empowerment, there are hopeful signs of fruitful alliances in various segments of society as well as of audible articulation of alternatives.

RITAMBHARA HEBBAR, SARTHI ACHARYA

The Tata Institute of Social Sciences and the All-India Institute of Local Self-Government, Mumbai jointly organised a seminar on Changing Social Institutions and their Impact on the Quality of Life on the April 28-29, 2003 at TISS. The Indian Association of Social Science Institutions was the sponsor. Four technical sessions were held during the two days of the seminar. This report is written in the form of an essay, encapsulating the essence of the papers presented and the ensuing discussion. Hence not all

participants may subscribe to all the views presented here. The authors nevertheless feel that the essence of the seminar is present in this essay.

Social institutions are among the earliest creations of humankind. They have served (and continue to serve) a variety of purposes relating to sustenance, social reproduction and governance. Today's world has many social institutions, some embedded in traditions and customs, others created as a part of modern nation building. Social institutions can broadly be classified into three: those which are intrinsically a part of the traditional common

(panchayati raj system and the urban municipal systems), and education and media. The choice of institutions primarily rested upon their importance in influencing the quality of life. The canvass, though, is not as wide as it could have been; as elsewhere, here too resource availability played a major role in drawing boundaries. It is nevertheless believed that even the limited view obtained from the existing papers would represent the institutional character in the country fairly adequately.

Evolution of Institutions: A Macro View

Independent India inherited a mosaic of social institutions: religious, governance-related, caste-oriented, village-based, tribal, each of which has evolved over 2-3 millennia.

There is contestation on what was (or is) the nature of the extant social institutions: whether, for instance, caste is/was fundamental, or is it the village that determines the social configuration of a local (rural) society? The view from 'below' which describes the intricate differentiation and hierarchy within even a village, versus the 'book-based view', which defines the village as a homogenous entity, has been discussed ad infinitum. Despite this controversy, the village has been treated as a unit of targeting development programmes as well as governance. This bias, carried in the official view, has perpetrated and intensified innumerable distortions, particularly in rural society.

Much has been said about the shifting contours of the state in the past five decades: that there has been a shift from central planning in the Nehruvian era to the present trend towards a market economy, wherein the state seeks to recede into the background. The state has gradually moved away from its earlier position of claiming to be the sole guardian of people's welfare, on the eve of independence, to a politically diversified and fractured position with a huge withdrawal from the economy now, given the political compulsions, the fiscal crisis, and pressures faced from the IMF market lobby.

The development process began with and continues (though with withering intensity over time) pursuing central planning for economic development. At the same time, the local self-government found roots for social and political development, as early as in the 1950s, and has strengthened over time. The coexistence of these seemingly polar processes – and the associated institutions – was justified since each works towards a more egalitarian and

just society. It was asserted that a public-controlled economic development would distribute the gains more evenly, and a local self-governance would politically and socially empower the downtrodden. Thus, whether it was an idyllic notion of a village or a village besieged in a feudal time warp, the 'same recipe suits all situations' continued (and to an extent continues) to remain an uncontested agenda.

It is not surprising that the macro-level agenda (of modernisation) has had contradictions and disagreements with the micro-level realities, which it has not been able to resolve. A typical example is the intention to raise rural production and productivity, and yet not attempt a simultaneous restructuring of land relations in the countryside (which is steeped in class and caste inequities, and feudal disparities). Similarly, the community development programme worked far less than optimally, as the village was far from tranquil and harmonious.

The incomplete land reforms have not only demonstrated the partisan character of the state, but have also exposed the limited efficacy of the top-down approach to development. It might be argued that the state accommodated (in contrast to crushing by force) contingencies and adapted to the larger demands made on it, by resistance movements or public discontent with its inability to deliver promises made, along the way. But a closer scrutiny reveals that in the process of this accommodation, it adopted a piecemeal and arbitrary approach to deeply ensclosed and complex issues of poverty, plurality and social injustice, with the intention of quelling the problem rather than seeking a lasting solution. The 73rd Amendment Act is a case in point, which is discussed in detail in the next section.

Inequality in income distribution has all along been more than apparent during the green revolution period. Agricultural production has now hit its so-called peak; a feat accomplished through high-priced technology and artificially high prices, and much of it at the expense of the ecology. Clearly it did little to mitigate poverty. A number of income generation and poverty alleviation programmes had to be launched thereafter to meet the worsening menace of poverty. The IRDP, all the Swarna Jayanti programmes, and the special programmes for women and scheduled tribes being implemented today are a sequence that began over three decades back.

In state initiatives to mitigate levels of exploitation, inequality and deprivation, it was amply evident that the modern processes of industrialisation and the spread of modern institutions such as education, will not necessarily lead to the adaptation

of modern values of equality and secularism. Industrialisation was earlier driven by artificial shortages of all and sundry goods and services (in short, it was a rent-seeking process), there was monopoly and/or bureaucratic indulgence with the country's precious savings, and finally, family and caste control over invested capital, a supposed legacy of the traditional order, has been characteristically high, resulting in a rather slow democratisation of capital. The development process was later opened up to market forces, thereby shifting the focus from 'equity by administrative dictums' to 'development by markets'. Similarly, education – particularly quality and/or higher education – was a domain of the urban and the privileged classes, a process which has only worsened with time. Likewise, institutions and processes of rural industrialisation and human capital formation in villages have at best been and stayed indifferent.

Caste as an institution found a fresh lease of life in modern institutions such as panchayats, schools, factories and government offices. Caste associations have become the equivalents of modern pressure groups, working their way through modern structures of power to further their interests. Such events have thwarted any serious attempt to reach out to the genuinely poor. Thus, government anti-poverty interventions have barely managed to meet expenditure targets on programmes meant for the poor, leave aside bringing about any significant change in their lives.

Today, resistance movements, ethnic movements and social and religious conflicts cannot be seen in isolation from the larger social and political dynamics. They are moments of *collective effervescence*, carrying within them the gist of institutional responses to the larger development processes. Such moments interface between state initiatives and civil society, and unlike popular understanding, provide *possibilities* of dialogue. This point appears pertinent in the present scenario wherein resistances are erroneously read as cultural critiques of an otherwise 'homogenising' state. Ironically, the over-dramatisation of the cultural identity has ready takers in this new phase of liberalisation, especially for redefining the varied components of development.

Decentralisation Process

It might be an exaggeration to say that there is euphoria being created about decentralisation since those in power have run out of choices; in its ideal form, decentralisation embeds a strong democratic character. As a principle that

advocates devolution of power to the lowest unit of governance, it has a larger reach in involving the least powerful in the democratic process.

In post-independence India, new formal institutions have been put in place with the belief that they will have the potential to bring about changes in the iniquitous caste, class and gender relations, and permit public access to the otherwise abstruse domains of life such as family and kinship. But are the formal institutions free of hierarchies and distortions? In other words, will the new formal institutions at the local level survive and alter the existing highly inequalitarian social, economic and political configurations? The discussion on decentralisation raised some of these questions in the context of formal institutions and their performance.

The 73rd Amendment Act, 1992 has been celebrated as a step towards democratic decentralisation, as it made provisions for (among other features):

- (a) The establishment of the gram sabha (the village assembly) as the lowest decision-making unit within the three-tier administrative system, at the village, administrative block and district;
- (b) Regular elections every five years;
- (c) Reservation for not less than one-third seats for women as members and chairpersons at the three levels and reservations for scheduled castes, tribes and other backward classes.

Villagers, as members of a constitutionally recognised gram sabha, could now formally, by a call of votes, accept or veto (at least the limited) development programmes and projects. By making provisions for women's reservations and reservations for other marginalised groups, the recent legislation on panchayat raj institutions has also made way for many women and people from the scheduled castes and tribes to represent the gram sabha as sarpanches or as heads of the village panchayat. As per the Maharashtra Human Development Report 2002, women constitute over 40 per cent of the chairpersons of panchayat samitis and 29 per cent of the sarpanches of gram panchayats. Similarly, representation of scheduled tribes has increased by 14 per cent and many of them have been elected from unreserved posts. However, such representations have not necessarily translated into empowerment of women, scheduled castes or scheduled tribes. The gram sabha has often reflected and reproduced the class and caste dynamics of the village. There have been instances when a scheduled caste or backward caste sarpanch also happened to be a 'front' for persons belonging to dominant castes, making it difficult for the incumbent to discharge

his/her duties as sarpanch effectively. Similarly, even though women sarpanches are no longer unheard of, this has not necessarily led to a consequent rise in women's effective participation in meetings and activities of the gram sabha/panchayat – at times their husbands attend the meetings!

These experiences reiterate the steadfastness of informal institutions in people's lives to the effect that, in practice, formal structures have assumed a character analogous to the feudal/caste-based institutions. The latter too have adapted well to the changing politico-administrative system and now work more in implicit ways than through overt practices that are at variance with the apparently approved values of equality and social justice. But it is worth pondering why formal institutions are attractive auxiliaries of the caste-based feudal order. Is it only the legitimacy that it provides in the new political and administrative set-up, or does it also reflect the amiability of the formal institutions to replicate hierarchies? Clearly, a frame of formal institutions is not going to yield different results, as it is the same people who have inherited a historical burden of caste inequality who run it, and they cannot be atomised into disparate categories of social institutions, state and society. There are therefore no short cuts to (difficult) cultural and social questions through administrative measures. Moreover, the fear is that these measures would strengthen those very values and practices that are the subject of change, thereby further deepening the sense of resentment and antagonism between social groups.

The increasing role of some non-governmental organisations (NGOs) in government as well as community endeavours can be understood in this light, where a growing need has been felt to strengthen cooperation and trust between people and social groups. The formation of community-based organisations (CBOs) is a step in this direction. The education sector too has been encouraged by NGOs through their taking up mass literacy campaigns, adult education programmes and other non-formal education initiatives. Education has always been considered a great leveller.

However, all is not well, as at times experience also proves otherwise. Education successfully reproduces the divide between the erudite and the illiterate. An overview of the education system in India clearly demonstrates a pattern of mutually dependent dualities in education: public versus private, English medium education versus vernacular, quality education versus sub-standard education. It logically

follows from this that poor education need not be the means to social mobility; rather, it could become a convenient mechanism to reiterate the extant hierarchies.

An area in which self-help groups (SHGs) (people-centred groups) have been active is rural credit. Though the formal financial sector has made inroads into the informal credit system, it has not been able to supplant the latter. With the failure of the top-down approach in enhancing credit systems in rural areas, the formal financial sector has now begun to support community level credit systems, such as the Sewa Bank, working women's forum, Share, Basix and Myrada. The idea behind initiating SHGs has been, first of all, to provide assistance to the rural poor against the exploitative systems of credit that exist in rural areas and, secondly, reach out to the economically marginalised groups, especially women. Despite the relative success of SHGs over the formal financial system in breaking into the older systems of rural credit at the local level, most SHGs have not been able to move beyond their limited purpose. Many of them are also organised around caste and class lines, including those of women. Educational differences also come to the fore in the management of these groups. SHGs function well within limited parameters and they do not overtly challenge the social and economic dynamics of the larger system. It is for this reason that very often social and economic cleavages prevail over such initiatives.

Decentralisation needs to be unmasked of its pretensions. One cannot afford a proliferation of new, formal institutions, which would only aggravate an already iniquitous situation. Silver linings in this dark scenario would appear only after all facts are laid threadbare, and then policies are made in a transparent manner on a realistic premise. In this regard, the discussion so far is far from optimistic.

Urban Sector

Urban areas do not present the same social configurations, conflicts or contradictions as those in rural areas, although large sections of the population in urban areas are spilt over from rural areas through migration. Hence it was deemed essential to have a separate discussion on urban issues.

Till the 1980s, many urban areas, particularly metropolitan centres, presented a picture of an 'urbane' (in the liberal western sense) and manageable civic society, with functional civic services. The situation thence had begun to change and deteriorate; for one, smaller urban centres have multiplied in number without much

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diversification in occupations, and therefore they carry a considerable rural resemblance, albeit in a veiled manner. Next, with uncontrolled outmigration from rural areas, urban settlements in the form of shantytowns have mushroomed, and distinct from the 'urbane' culture of the yesteryear the cities (all cities, without exception) now are more rustic, poorer, and people therein increasingly work in the so-called urban informal sector whose activities are not necessarily integrated into the 'mainstream' of urban industrial or commercial activities.

Most urban centres face a crisis of governance today. Besides the overarching caste-class based dimensions mentioned earlier – largely a spillover from rural areas – some other problems relate to the quality of decentralised local self-governance. This seminar restricted itself to the latter issues alone, and institutions herein were the major topics of discussion. The two issues discussed were, governance per se, and finances.

The model of development, as it has unfolded in urban areas, bears distinctly different contours from rural areas: there is industry, commerce, trade, bureaucracy here, and most importantly, there is now a civil society composed of the press, activists, NGOs and academia, among others. There is also increased demand for grass roots democracy whose elements range from empowering the weaker sections, to entrusting local institutions with bigger responsibilities, so that the base of governance becomes more people-centred. Nevertheless, both political and social institutions have far from achieved what they had (have) set to achieve, particularly with respect to raising the quality of life of the people at large. In this regard, the increased articulation of higher expectations brings out more failure stories in urban areas than in rural areas, and along with it, a higher degree of cynicism.

The debate on strengthening institutions in this seminar extended to physical strengthening of institutions as well. This in simple terms implies better resources to be available with local bodies. Following from expectations of the 73rd and 74th amendments in the Constitution, principal among these institutions are the municipal corporations. In reality, too many expenses, too few revenues and in turn large deficits, have so far led to poor services and governance. These are a reflection of populist policies (of high subsidies and unrealistic pricing of services), low productivity and employability of people – especially the migrants, who earn a pittance and pay little to the exchequer – squeeze on physical space, and last but not the least, indifferent governance. There is possibility of some

optimisation emerging from some reshuffle within the existing balances of revenues and expenditures through fiscal measures and administrative fiat, limits would be reached very soon, as the aggregate demand on services and space far outstrips the supply. It is no coincidence that most cities, particularly the suburban areas in these, have begun to appear more like overgrown villages than cities, with much of their caste-based (feudal) characteristics intact.

For sure, urban problems do not have solutions in urban settings alone. Governance comes from the same classes that govern rural areas as well, and hence carry with them all the burden of their agrarian history. This is strengthened by the rural-urban continuum of peoples. Next, a large section of the generic urban polity too has not transformed itself out of its rural/pre-industrial roots. Thus, to expect a holistic solution in geographic isolation would be a contradiction in itself.

Conclusion

What then can be done? The discussion thus far, though disheartening, suggests that not all is lost. As long as articulation for alternatives is audible, there surely is a way of giving shape to these voices. Alliances of the benevolent within the oppressors with sections of the untainted civil society, crusaders, missionaries, tolerant religious leaders, and others having some concern beyond one's narrow self, are possible silver linings. The fact that 'scams' in educational institutions, booth capturing in elections or corruption in co-operatives are being unearthed without discretion, is a justification of this optimism. Next, it is also possible to learn lessons from the 'gramscen banks', 'Chipkos' and 'SEVAs', to name a few, for future action.

Apart from recommendations relating to human development, people's empowerment and dispersion of power, the need for more studies to highlight newer challenges was specially emphasised. This seminar did not delve into finding solutions per se: the participants were acutely aware that to suggest solutions to such complex problems would be philistine.

It is for this reason that the seminar did not schedule a concluding session. Participants felt that the setting up and functioning of institutions at various levels, particularly after the 73rd Amendment in the Constitution, requires close monitoring and evaluation, for which research should be undertaken on a priority basis. [27]

[We are deeply indebted to the late Vikash N Pandey for his comments on the earlier draft of this essay.]

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Vision-2050-India

Security and Human Development

Security is an issue of Governance. It is time to re-look at governance comprehensively. Governance implies discipline in various instruments of government, namely legislature, executive and judiciary. This discipline should imply objectivity and selflessness. It also implies transparency in working and honesty in transactions. Over the last fifty years, many of our institutions have declined, resulting in loss of confidence of the people in our systems.

DEVELOPMENT WITHOUT security is unthinkable. Needless to say, human development can foster only in an environment of security. Thus in many African Countries where strife is virtually a permanent feature, human development is very low. However, certain countries like Sri Lanka have maintained a high human development profile despite a long spell of insurgency. This has been possible because Sri Lanka localized the problem and did not allow the pace of development to slow down.

From the angle of Human Development, security has many dimensions namely-Environment Security, Food Security, Social Security and Personal Security.

● Environment Security

Environment Security implies clean environment so that people can enjoy a good quality of life. It would be in order to mention here that strict enforcement of environment laws and

implementation of rehabilitation packages are essential for upgradation of environment. It would be a better strategy to address ecological problems, which have contributed to the deterioration of environment. For good results there is a need to switch to participative planning and implementation of projects at the grass root level. Prescriptive planning has not succeeded in India because of its size and variety of local factors.

● Food Security

However, when we are thinking in terms of converting our people into high value capital assets, we cannot contend merely with "Chapati Security". We have to plan for providing them with nutrition security, which is more cost effective in real terms. It may not be possible for the Government to subsidize nutrition, because of the cost involved in procurement and distribution. A better option would be to invest in

activities that create opportunities for the people to earn enough to sustain themselves.

● Social Security

Social Security is also important for human development. Every citizen should be assured that in case of adversity, the social safety net would protect him. Thus, physically handicapped, destitute and senior citizens who have no support, can also enjoy a reasonably good quality of life. This aspect of social planning needs to be emphasized much more than is being done today. There should also be a safety net for people who may be temporarily out of employment. Health problems like drug abuse and HIV/AIDS have to be appropriately addressed on the social plane. This would require a close partnership between Government and social and non-governmental organizations. It may be noted that both these problems are very serious and have to be tackled on a war footing.

Sh. Rajiv Sharma, Joint Secretary in the Ministry of Coal is a Political Scientist and author of 4 vision statements during the last four years. This is an inscript from vision 2050 document which he has authored.

● Personal Security

Personal security is directly linked with quality of life. Life cannot be smooth if there is always a lurking danger to personal safety. This implies strict enforcement of law and order. It also requires a system where law is blindly enforced without any fear or favour.

Security is an issue of Governance. It is time to re-look at governance comprehensively. Governance implies discipline in various instruments of government, namely legislature, executive and judiciary. This discipline should imply objectivity and selflessness. It also implies transparency in working and honesty in transactions. Over the last fifty years, many of our institutions have declined, resulting in loss of confidence of the people in our systems. Consequently, often we are considered a soft state.

The most suitable system of governance that fosters human development is democracy. We inherited democracy and it is our duty to preserve it, percolate it and institutionalize it. If we are able to continually do this, over the next five decades, there is no reason why we would not be able to join ranks with the few countries where Human Development Index (H.D.I.) is more than 0.9.

Achieving a high level of human development requires determination, meticulous planning, time bound implementation and transparency in operations. Development strategies should be carefully evaluated in terms of their financial and social costs. Non-renewable resources should not be wasted or overexploited to satiate individual greed. Human development can foster in a peaceful environment. Therefore, social peace is an essential requirement for human development. It may be mentioned here that we cannot afford to ignore human development any further. If people are deprived and the numbers of such people continuously increases then the very survival of the society is endangered. Next fifty years would test the mettle of our political system, our judicial system and our administrative system.

Joining ranks with the best in the West should be the target of planned development over the 50 years. We can set every decade as a benchmark to evaluate our past performance and set targets for the next ten years. Every five years we should have a mid term appraisal to evaluate progress and effect mid term corrections and every year we should evaluate how we are moving and identify problem areas for appropriate rectification. This is the new approach to planning which would sustain human development.

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Perspectives for making India a developed nation

"India is marching towards a bright future. We have our share of problems. But these cannot hide the brightness of the horizon....."

These are the words of the Prime Minister who emphatically declares that the day is not far when every region, every community and every citizen in our country shall enjoy the fruits of prosperity and progress. And this is not an impossible dream.

It was Gandhiji who visualised Indian democracy as an engine of balanced growth. He wanted the system to serve the needs of the poorest of the poor. It was Gandhiji's vision that brought the Antyodya Scheme into this country. On December 25, 2001, Prime Minister Atal Bihari Vajpayee launched the 'Antyodya Anna Yojana'—the largest food security scheme for the poor anywhere in the world. This covers a targeted population of 1.5 crore families to qualify for getting 35 kgs. of cereal per person, per month @ Re. 2/- per kg. for wheat and Re. 3/- per kg. for rice.

The success of any development programme is judged by the human development index. In the Tenth Plan, the parameters of growth have been defined with human development as the major centrifugal force. But the major bottleneck for human development is poverty. Poverty is a curse in itself and also is a bane in the process of development. Traditionally poverty has been always defined based on income or consumption as the base. However, what matters most is the purchasing power of the individual in real terms in view of inflation and its reflection in the cost of living index.

Keeping the eradication of poverty as the main theme, Indian planning has entered its golden jubilee. Various Plans had various index leaders for the model on which growth and development formulated—agriculture, industry, education, health, literacy. However, poverty eradication has been *omnipresent* as the greatest challenge for the entire planning process. The concept of globalization, liberalisation, market friendly policies and integration into the world market was started in the late eighties and gathered momentum in the nineties had all the while kept the poverty ridden vicious circle of low income—low consumption—low savings—low investment—low capital formation resulting in a rigid structural economy—as its main target to attack and take the economy onto a higher gear.

The second wave of economic development started at the close of the last millennium has built two great linkages in the globalisation—liberalisation process by integrating poverty and unemployment as two corner stones in its matrix. The Sampurna Grameen Rozgar Yojana launched in September 2001 with an annual outlay of Rs. 10,000/- crores, is the largest Food—for—Work Programme in the history of India. This programme has a projection of creating hundred crore mandays of employment every year in rural areas.

On the employment generation front, the net employment opportunities created during 2000-2001 is 73.3 lakhs, during 2001-2002—78.6 lakhs and during 2002-2003—82.7 lakhs (provisional). The data released by the Planning Commission compare in the face of pledge to create one crore new job opportunities in the country comprising all the sectors including government.

Having kept poverty and unemployment as a principle corner stone while gearing up the Indian economy for global integration, various sectoral priorities have also been addressed. However, the most visible silver lining during the last five years as part of the new wave economic development is the concrete result arising out of the Prime Minister's visit to China during the last week of June this year. Apart from finding meaningful solutions to resolve boundary issue and other bilateral matters, the most significant aspect is Mr. Vajpayee's speech at Shanghai in which he spoke of embedding Indian software and Chinese hardware towards building a major share in the world IT industry. This endeavour viewed in the overall context of the two giants acting in concert for faster growth and development looks to be the *apple pie* in the new wave economic development programme of the government.

CHIEF EDITOR

Policy for disabled on the anvil

By Sahana Charan

BANGALORE, AUG. 9. The Karnataka Government proposes to come out with a policy on disabilities to address the needs of the marginalised disabled people. The office of the Commissioner for Disabilities is formulating a draft framework of the policy, D. Thangaraj, Secretary, Women and Child Welfare, and Commissioner for Disabilities, told *The Hindu*.

Karnataka will be the first State in the country to come out with a policy on disabilities when the Government adopts the document.

The State Coordination Committee, set up under the People with Disabilities Act, 1995, is supposed to serve as the focal point on disability matters and aid in evolving a policy to solve the problems of the disabled.

The draft recommendations made by the commissioner's office will be placed for review before the committee shortly, which, in turn, will be forwarded to the Government. Discussions were held with various stakeholders while drawing up the draft, he said.

The draft recommends interventions in the field of disabilities which should focus on prevention and early detection. The Health Department should play an active role in the identification of disabled

RECOMMENDATIONS

- Focus on prevention and early treatment of disabilities
- Health Department to identify disabled people.
- Three p.c. quota in educational institutions, jobs, poverty alleviation schemes
- Barrier-free environment in public places

persons and provide prevention services and treatment.

There should be mainstreaming of disability certificates issued by medical authorities. "Certificates issued by various institutions are not in accordance with the Union Government guidelines. The policy will stress on addressing this issue," Pradeep Kumar, Assistant Commissioner of Disabilities, said.

The draft recommends ensuring of a barrier-free environment in public places, schools, colleges, and government buildings.

All government and aided educational institutions should reserve three per cent of the available seats for disabled students.

Three per cent of the job vacancies in

government agencies should also be reserved for them. They should be given three per cent reservation in benefits in poverty alleviation schemes.

Mr. Kumar said a consultation with NGOs, government departments and other stakeholders would be held before the draft was placed before the Government.

Other recommendations include: Provision of aids and appliances for rehabilitation services at the district level. (For this, orthotics and prosthetics centres should be established in each district.); registration of all institutions dealing with disabilities to ensure transparency and quality services; provision to encourage research and manpower development in the area of prevention, rehabilitation, and development of assistive devices for the disabled; establishment of institutions for care of persons with severe disabilities; free education to disabled persons till they attain 18 years of age, in accordance with the Act.

The draft framework suggests the formulation of an education policy by the State which will incorporate provisions for disabled students such as restructuring of the curriculum to suit their needs, scholarships and ensuring a barrier-free environment.

TN HDI higher than national average

By V. Jayanth

CHENNAI, AUG. 9. Tamil Nadu's Human Development Index is 0.657, compared to the national average of 0.571, according to the State's first Human Development Report published recently. A report of the Union Planning Commission places the State third, with an HDI of 0.531, in a list of 15 major States.

In its report, the State has constructed HDI for all 29 districts using the UNDP methodology. Chennai takes the top position, while Dharmapuri ranks last. The HDR has also looked at Gender Development Index, which is estimated at 0.654 for Tamil Nadu, against 0.560 at the national level (2002).

But the report has called for a 'gender policy', emphasising equality for women, with a focus on ensuring higher wages, expanding non-farm activities, equality in health and education and drawing up a blueprint for effective prevention of crimes against women.

The report, published by the State Planning Commission and Social Science Press, says Tamil Nadu's focus in the next decade should be on "reaching levels attained by Kerala in

TN: Human Development Indices

Population	62 million
Sex ratio	986
Density of population	478 / sq. km.
Per capita income	Rs. 19,889
Below poverty line	21.12%
Infant Mortality Rate	48.2 (98-99)
Literacy rate	73.47%
Human Development Index	0.657

Source: TN-Human Development Report

health and education, while aiming at increasing levels of the State Domestic Product to those of Punjab or Maharashtra to reduce poverty and inequality".

Tamil Nadu is the sixth State, and only the second in the south, to release an HDR.

Profiling the State, the report notes that its population had reached about 62 million in the 2001 census, compared to 55.9 million in 1991. The sex ratio worked out to 986 in 2001, against 974 in 1991 and 977 in 1981.

The State per capita income, which was below national average in 1980s, crossed that mark in 1991-92 and has maintained the trend. At Rs. 19,889, it

ranks fourth, after Maharashtra, Punjab and Haryana. As such, it tops southern States - Kerala (Rs.19,463), Karnataka (Rs. 18,041) and Andhra Pradesh (Rs. 16,373).

The State has made "impressive strides" in some major health indicators. Significantly, the annual population growth rate for 1981-91 was just 1.43 per cent, second only to Kerala (1.34 per cent), compared to the national average of 2.14 per cent.

Looking ahead, the report points out that in a State where 65 per cent of the population lives in rural areas and depends on agriculture for a living, generating employment or enhancing income levels should centre around the primary sector's contribution to the SDP, which fell from 24.82 per cent in 1993-94 to 18.16 per cent in 1999-2000. While ensuring food security with a stabilisation of rice cultivation on about two million hectares, commercial crops with a market advantage should be encouraged.

The HDR made a cautionary note on the need for social security for the aged. According to an estimate, the State's share of the elderly may go up to 11.43 per cent by 2011 and the problem has to be tackled holistically.

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Lifelong Learning and Adult and Continuing Education and Extension in Indian Universities

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Adult and Continuing Education and Extension is coming to occupy an ever larger place in the life of people, as its role among the forces at work in modern societies increases. The traditional division of life into separate periods of childhood and youth devoted to schooling, adulthood and working life no longer corresponds to things as they are these days. Today, no one can hope to amass, during his or her youth, an initial fund of knowledge which will serve for a lifetime. The swift changes taking place in the world call for knowledge to be continuously updated, and at the same time, the initial education of the young is tending to become more protracted. Education is changing fast. More and more opportunities of learning out of school are occurring in all fields. While skills, in the traditional sense of the term, are giving way in many modern sectors of activity to the ideas of developing competence and adaptability.

Adult and Continuing Education that is really in harmony with the needs of modern societies can no longer be defined in relation to a particular time of life or to too specific a purpose. The time to learn is now the whole lifetime and each field of knowledge, spreads into and enriches the others. In the Twenty-first Century, Adult and Continuing Education is so varied in its task and forms that it covers all the activities to acquire a living knowledge of the world, of other people and themselves. Education throughout life is based on four pillars; learning to know, learning to do, learning to live together and learning to be. The key to the Twenty-first Century, 'Learning Life' will be essential for adapting to the evolving requirements of the labour market and for better mastery of the changing time-frames and rhythm of individual existence.

The policy frame of the University Grants Commission states that if the university system has to discharge adequately its responsibilities to the entire educational system and to the society as a whole, it must assume extension as the third important responsibility and give it the same status as research and teaching. The explosion of knowledge all over the world creates a moral obligation on the university system to work for its dissemination amongst the masses in addition to its age-old work of generating new knowledge. This makes it imperative to work for eradication of illiteracy as a beginning to bridge the gap between the haves and have nots for acquisition of knowledge. The University Grants Commission had taken a bold initiative in declaring Extension as the third dimension of higher education equal in importance to teaching and research.

The third dimension arises to promote a meaningful and sustained rapport between the universities and colleges and the community. It aims, firstly, to extend knowledge and other institutional resources to the community and, secondly, to gain insights from contacts between knowledge resources and socio-cultural realities with a view to reflecting these in the entire curricular system of higher education including teaching and research. It is a two way process between the experts and the people, as intellectual intervention in the problems of communities, which need to be overcome through an educational process. It is that education which helps students to face life and its challenges and create an ambience for a learning society.

A university in order to realize the aim of community service, should endeavor to bring within its scope and influence not only the students who come under the normal selection criteria, but also such adult members of the community who have been denied the benefit of university education due to one or the other reason like poverty or lack of opportunity. In every society, the number of people who are able to afford university education form a very small percentage. The history of higher education has been almost evidencing the advancement of only the upper strata of people. The solution to the socio-economic problems of India would be solved to a great extent if opportunities for the adult members who are unable to obtain enlightenment due to poverty or daily struggle for livelihood. A university must gain a better knowledge of the communities, if it has to serve their needs, aspirations and conditions generally. Thus the higher education system must recognize Adult and Continuing Education and Extension as a part of its formal and normal work.

The Kothari Commission has rightly pointed out that "the image of the university as a closed academic community of scholars creating and disseminating knowledge and perpetuating its own type is a thing of the past. The walls which divide the gown and the town have crumbled and the life of the university and that of the community can be virtually linked for their mutual enrichment". The University Grants Commission in pursuance of the Kothari Commission recommendations prepared guidelines establishing the role of universities and colleges in the field of adult education and extension. It was agreed that the institutions of higher education should realize the need for carrying the knowledge and skills to

people in all walks of life and accept service to the community as one of their important responsibilities. The 330 universities and 13000 colleges put together cater to nearly 6.4 million people out of more than 100 million people of the country. There are large masses of people who are deprived of any tangible benefits of the higher education system. Our education system and its human resources development activities need to focus on appropriate programmes for the total population related to socio-economic development of the country. This will facilitate linking higher education with the development and production process, conforming to the UGC policy of considering extension as the third dimension of higher education.

Development of Programmes

The University Grants Commission has introduced a programme of adult continuing education and extension in universities in the seventies to enable them to play an important role in fulfilling their social obligations to the larger society in addition to their usual functions of teaching and research. The University Grants Commission have taken a number of steps to promote and guide involvement of students and teachers in various activities under the third dimensions:

- Creation of Departments/Centres of Adult and Continuing Education and Extension with non-vocational academic core staff and with all benefits given to teachers including merit promotion scheme.
- Assistance for various activities under Adult and Continuing Education and Extension up to March 1997 and subsequent take over by the concerned state governments.
- Promoting integration of Extension in the curricula, and academic incentives to students participating in such activities.
- Provision for staff development for adult literacy and adult education in the preparation of training manuals and short term training courses, Diploma/ Degree courses or M phil.
- Development of learning resources in print and audio visual formats as supportive of field based activities.
- Support to research methodology workshops and development oriented non-formal education.

- Transforming the Adult and Continuing Education movement into a life-centred, lifelong learning process.
- Extension to permeate in all disciplines of studies at all levels.
- An area-based non-sectoral community approach extending access of education to the door steps of all segments of the people of a given community, in the form of community education movement through promoting micro-planning.
- Developing Adult Continuing Education Departments/Centres as a separate inter-disciplinary Faculty of Non-formal education.
- Encouraging students to opt for a semester to work in programmes for preparing a project report in lieu of one of the optional papers in every subject.
- Mass campaign by involving the entire student community along with their teachers through special literacy camps for creating an environmental support and awareness among the people.
- Use of new audio-visual technologies for rapid spread of knowledge in science and technology with a view to inculcating a scientific temper.
- Institutionalisation of activities under the Third Dimension through their integration with the academic system in terms of giving these a due place in teaching at the undergraduate level in foundation courses, applied courses, community service, postgraduate level project work, case studies. M phil and Ph D research with interdisciplinary approach, allocation of time for off campus extension activities in terms of long-term community education programme, through organisation of community education centres accessible to learners at their convenience for learning programmes of their choice.
- Preparation of micro-level development plan and ensure participation of village / and community leaders, government and other development institutions in the area, so as to ensure constant interaction and co-ordination.
- Transferring college based area projects into community education centers which should be run in the college premises on a whole time basis providing access to learner at their convenience and at their own choice.
- Evolve a system of institutional and individual incentives for work in various extension activities.
- Make the programme under third Dimension as part of the larger national perspectives on social development with eradication of illiteracy as an entry point.
- View the post-literacy and follow up programmes as part of a total package to avoid neo-literates from relapsing into illiteracy and to adopt multiple strategies in programme implementation process.
- A standing committee at the University Grants Commission level will advice on policy matters and overview the implementation of the entire programme.
- A sub-committee was constituted at the University Grants Commission to examine proposals for universities and colleges to financial support as well as to review the implementation of the programme.
- Each university participating in the programme shall set up a Department/Centre for Adult and Continuing Education and Extension on par with other statutory Departments of the University. The Department/Centre will have core staff, i.e. Director, Assistant Director and Project Officer. This core staff being non-vocational academic staff shall be entitled to all privileges and facilities available to teachers in other Departments of the university.

UGC Guidelines

The University Grants Commission issued guidelines to implement adult continuing education and extension programme in (1978 and 1982), Eradication of Illiteracy and spread of universal elementary education (Point No. 16 of the 20 point programme) (1983). Population Education Clubs (1984), Planning Forum (1985), New guidelines on Adult and Continuing Education and Extension programmes in universities and colleges in (1988). Total literacy campaign (1992), and 9th plan Guidelines on Adult continuing Education and Extension and Field Outreach (1997) in the universities and colleges.

The National Adult Education Programme (NAEP) provided the first major opportunity in 1978 to involve universities and colleges, through their students and teachers to provide education to those sections of the communities which were earlier denied access to such opportunities. In all 92 universities and 2138 colleges have been involved in the programme. They undertook

to conduct more than 25000 adults education centres till June 1987.

As a result of the 1982 guidelines on Adult and Continuing Education, universities implemented the following programmes.

- Awareness generating to help people became increasingly aware of account and social problems in contemporary world.
- Programmes to promote social, economic, literary, cultural and intellectual environment of the community.
- Basic education and skills through social awareness, motivational programmes, functional literacy and university courses, post literacy programmes, skill and craft development courses and supplementary activities to motivate the community.
- Imparting and improving skills and professional knowhow through developing vocational skills and professional competence, creating opportunities for in-service and refresher training to update professional and academic knowledge, training programmes for industrial workers, technicians, vocations staff, generate self-employment and remedial/bridge programs for students, parents and teachers.

The point number 16 of the 20 point programme for eradication of illiteracy, and the universal elementary education was implemented with the following objectives.

- Planned involvement of universities and colleges through students and teachers effectively in the eradication of illiteracy.
- Universities and colleges have to play leadership roles towards a dynamic adult literacy programme in the country.
- Providing special attention towards programmes for women, scheduled castes and tribes, handicapped and people from the rural, backward and slum areas.
- Relating the programmes directly to the needs, interests, aspirations and life situations of the learners and to the national goal of socio-economic development through a process of operational linkages with the developmental programmes.
- Helping in acquisition of basic literacy skills, post-literacy and follow up programmes and continuing

education so as to bring the learners in the ambit of life-long learning process.

In 1984, the University Grants Commission issued guidelines on the scheme of population education clubs to be implemented through adult education and extension centers. The objectives of the program are: to make student community aware of the dynamics of population and to enable them to understand the determinants and consequences of the population problems; to make students understand the population policies and programme of the country and appreciate the need for small family norm and to educate the community about the consequences of rapid population growth at the family and national levels.

The major activities undertaken by universities under the scheme are: organize debate, essay writing competitions, elocution competitions, symposia, group discussion, drawing, painting competition on issues pertaining to population; to arrange lectures by visiting experts; to develop audio-visual materials on population education; to enact dramas on the theme of population education; to procure literature to maintain in the library; to organize extension programmes with the member clubs, *Mahila Samajams* and youth clubs and adopt a village each year and organize population awareness campaign in every home in the concerned village.

From 1985 onwards the scheme of planning forum also started along with the adult education and extension centres. The objectives of the scheme were: to create an awareness of need for planned development of the country among the student community and involve them in national development efforts right from the planning stage and to develop plan-consciousness among the educated youth and through them the general public. The major actives of the planning Forum were: to work as a repository of all plan literature. To serve as a plan information centre and develop plan consciousness through talks, debates and seminars; conduct surveys and need assessment; organize exhibitions of five year plans and adopt village for integrated development.

The Mass Programme for Functional Literacy (MPFL) was implemented through students and teachers of the universities and colleges. Under the programme, the literacy course is to be imparted for approximately 150 hours by the student volunteer. After the literacy course is over, it is expected that the student would occasionally guide neo-literates in the postliteracy

and continuing education. During 1988-89, 3.5 lakh National Service Scheme Volunteers, 1.5 lakh non-NSS students and 75 thousand NCC cadets were involved in the effective implementation of the programme.

As visualised by the University Grants Commission, the following programmes were implemented through the Departments/Centres of Adult and Continuing Education and Extension. They are:

- National Adult Education Programme
- Adult Education and Extension Programme
- Eradication of Illiteracy
- Mass Programme for Functional Literacy
- Postliteracy and Continuing Education
- Population Education Clubs
- Total Literacy
- Transfer of Technology through Extension
- Science for the People
- Planning Forum
- Environmental Education
- Area Development programme

The National Policy on Education, 1986 had emphasised the linking of Adult and Continuing Education and Extension programmes with the national goals, which include:

- Alleviation of Poverty
- Environmental Conservation
- National Integration
- Observance of Small Family Norm
- Women's Equality

In 1988, the University Grants Commission recommended that the universities and colleges should adopt an Area Development Approach for their integrated community development activities including adult education under the third dimension. It is based on the realization that institutional resources need to be pulled together in an integrated manner as a part of development intervention. The Area Development Approach envisages interlinking of the existing programmes of removal of illiteracy and continuing education with other development activities as an extension programme in the community for achieving critical development goals and to set up demonstration units in areas adopted

by the universities and colleges. Under the programme, universities and colleges can choose the categories of programme comprised of specified number of adult education centres, Mass Programme for Functional Literacy, continuing education courses, community based population education clubs, *Jana Shikshan Nilayams* and non-formal education centres.

Major programmes implemented by Departments/Centres of Adult and Continuing Education and Extension during the 9th plan were: developing and conducting academic courses at certificates, Diploma, Degree and Postgraduate courses, M phil and Ph D level Programmes, vocational and career oriented courses, equivalence programmes, collaborative programmes with governmental and non-governmental organizations, research and evaluation studies, total literacy, post literacy and continuing education programmes. Population Education Resources Centres were established in 17 out of the 103 Departments/Centres of Adult Continuing Education and Extension to co-ordinate population education programmes in universities and colleges.

The 10th Plan document of the University Grants Commission stated that the universities and colleges would continue to play a dominant role in social change through outreach activities. The third dimension of universities need to be further expanded and be supported to take large variety of activities in the fields like adult education to equip them with skills and enhance their utility and continuing education for people in profession to enhance their expertise and skills. Outreach activities to be organized in women's studies, environment, human rights, value education, duties education, traditional language, yoga and personality development.

In the complex and rapidly changing society, higher education must contribute to the initiation and strengthening of the process of development with equity, justice, solidarity and liberty as key elements. To attain this objective, the core mission of Adult and Continuing Education and Extension—to educate, to train, to undertake research and to provide service to the community—must be preserved, reinforced and further expanded. The healthy growth of any nation requires educated citizens with skills and expertise. The universities and colleges need to be used as focal points of activities to spread and sustain skills and expertise through the torch of lifelong learning. □

Primary Education in Rural Areas

An Alternative Model

The indifferent success of the present system of primary education in India, which has left 30 million children out of schools, calls for a complete change of the method of delivery of education. The model discussed here has features that ensure flexibility, accountability and quality, which can help achieve the threefold objectives of elementary education – universal access, universal retention and universal achievement.

SANJAY KUMAR, B J KOPPAR,
S BALASUBRAMANIAN

Numerous books have been written elucidating the social, economic, and political importance of elementary education. A number of official resolutions have been adopted and judgments pronounced on various occasions to ensure education for all Indian children. Still the goal of universal elementary education (UEE) remains elusive [Godbole 2001].¹ The National Policy on Education (NPE), 1986, as modified in 1992, meticulously enumerated the problems relating to universal elementary education in India [GoI 1992]. The document not only talks of problems, but also recommends several innovative parallel systems to reach the goal of UEE [ibid:38]. These innovations² no doubt have helped improve coverage [Chen 2002], yet a huge gap exists. Translated into numbers, this means that more than 30 million children are out of school in India, the majority from rural areas.

According to Amartya Sen, "Primary education in India suffers not only from inadequate allocation of resource, but often enough also from terrible management and organisation" [Sen 2002]. To him, 'organisation and governance of primary schools' has remained a neglected subject in much of India. Albert Einstein opined, "The problem cannot be solved on the same level on which it was created. One has to rise above it to the next level." Thus an entirely new approach is required. The delivery system needs to be altered drastically. Changes in strategy, i.e., devising an altogether new delivery mechanism, is the need of the hour. A model that is

cost-effective, self-sustaining,³ and has reduced scope for corruption is presented below.

Under this model, designed mainly for rural India:

- State will provide 'free and compulsory education' to all children subject to the limits of its economic capacity;⁴
- Competition ensures better service at lower cost;
- Human beings per se are not averse to learning (education). In other words, given the proper environment every child yearns to learn;
- The prime objective of primary level education is to help the child acquire the ability to read and write;⁵
- The state will build schoolrooms around a playground and lease them out to qualified teacher entrepreneurs to run primary schools from standard I to IV according to the curriculum designed and approved by the state;
- The state will continue to support primary education by giving educational vouchers to all eligible children which can be used to pay fees in any school of their choice run by the teacher entrepreneurs.

With these parameters in mind, a simple model is constructed which meets the threefold objectives of 'universal access, universal retention and universal achievement'. Given a trial it may revolutionise the present educational scenario, like that of the 'countrywide communication boom' led by the opening of STD booths.

How the Model Works

The objective of primary (elementary) education is to develop the ability to read, write and do a little bit of arithmetic. At

the primary level, starting with 'ank and akshar',⁶ the curriculum should include only two subjects – basic mathematics and one language.

We recommend that basic mathematics and one language (preferably the mother tongue) should be taught at different levels from standard I to standard IV. Subjects like general knowledge and moral science can be incorporated in the language paper. The ideal age group for this level of learning is 6-10 years. (Standard I to standard IV.)

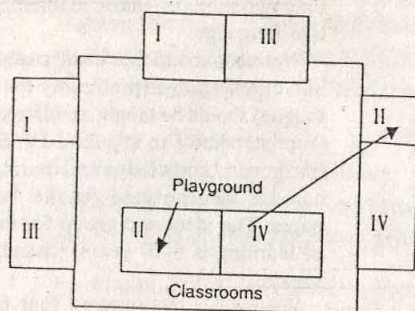
We further recommend four hours of schooling from 9 am to 1 pm with liberal attendance requirements. The flexibility in terms of timing and attendance requirement may appeal to parents 'reluctant' to send their children to schools. One of the most important reasons for the high rate of dropouts is said to be the 'need for children to work or look after siblings'. A half day school (in the forenoon hours) with flexible attendance requirements shall be least interfering with the socio-economic compulsions of rural parents. There shall be no schooling for the children of the tender-age group in afternoon session.

We recommend no examination till standard IV for, 'fear to failure' among grown-up children is a valid reason for avoiding school. As long as the 'four-year schooling model' achieves its stated objective of 'developing the ability to read and to write', it can go without a formal examination system. There is no need to frighten first-generation learners unnecessarily. This does not mean that we are against the concept of evaluating students. A student seeking admission to standard V in a recognised school shall have to clear an eligibility test conducted every year by the state.

We are deliberately not recommending structured 'co-curricular and extra-curricular activities' in the school curriculum for two reasons. Firstly, physical exercise is inbuilt in rural life. Secondly, any state-prescribed programme for 'co-curricular or extra-curricular activities' may have a discouraging impact upon fun-loving kids.

The school building, should be airy, bright and clean. Such primary school buildings should be constructed around a playground and owned by the state. The logic behind this is simple. In rural areas, private operators may not be willing to invest in land and buildings. Moreover, such schools should be socially as well as

Figure: A Model School Campus



physically accessible to all. The location and ownership of schools [Mishra 2000] becomes a critical issue in this case. Moreover, the government has the power to utilise available common land or acquire such land near or within the village for the purpose. Besides, the gender and caste equity question can be addressed more meaningfully with the state retaining overall ownership of the school.

Construction of four blocks (a two-room set) around a common playground is recommended primarily to keep costs under control. Further, the presence of more than 200 children in the same campus provides a conventional school-like atmosphere (even under four different managements). It shall also abstract the location advantage (if any) to a particular set of entrepreneurs as well as students. In an extreme situation, it will be easier for a parent dissatisfied with a particular management to switch over to another school under different management located in the same campus (Figure).

No other construction (toilets, separate activity rooms, store rooms, drinking water rooms, auditorium, mid-day meal kitchen) should be allowed inside the premises to avoid cost escalation both in terms of construction as well as maintenance. In the absence of proper maintenance, these places invariably turn into smelly potholes. The mid-day meal scheme (MMS) for the children shall be handled by a separate agency.

Altogether, in one cluster, there shall be eight rooms under the control of four teacher-entrepreneurs with a capacity to accommodate 240 students (30 in one room) comprising two units each of class I to IV.

The four blocks should be leased out to four enterprising teachers with a minimum HSC qualification [NCTE 1998]. The qualification of HSC is recommended keeping in mind the balance between local

availability of manpower in rural areas, a uniform standard criteria across the country and meeting the 'prescribed' qualification for primary schoolteachers. It can help in addressing the problem of unemployment among educated youth in rural areas.

The blocks should be leased out at a minimum rate of Rs 500 per month renewable after three years. By charging this sum, entrepreneurs' stakes are created in the system. In the absence of such stake, there exists a possibility of derailment of the entire system. In any case they are going to make the payment out of their earnings from the system.

Further, the teacher entrepreneur shall have the full liberty to use the buildings beyond school hours to enhance his earnings. A set of dos and don'ts can be included in the lease agreement. He/she should have the liberty to undertake tuition except for the children of their own school.⁸ All such provisions are meant to enhance his/her stake in the system by giving them the opportunity to earn more so that (s)he take a keen interest in running of the schools. Under the agreement, they shall have to employ at their own cost at least one assistant (HSC pass).

It is expected that an enterprising teacher getting a contract for running two classes can admit at the most 60 students in a year. Hence they can earn Rs 6,000 per month (Rs 100 voucher per student per month). Out of their earning, they have to hire one assistant and to pay the stipulated rent. Even if (s)he saves Rs 3,000 per month,⁹ it is not an insignificant amount for an HSC pass person in a rural area. Depending upon their ability and aptitude, they may earn more.

Quality of Education

In the present circumstances, coverage is prime, quality follows. The curriculum prescribed by the state shall be followed to ensure syllabus uniformity. As it is assumed here that the young entrepreneurs shall make bids for such schools, there will be strong inbuilt competition among them to attract students to their schools to increase their income within the prescribed limit. The inbuilt competition shall ensure the quality of education in terms of regular attendance of teachers and students as well as involved teaching.

Under this model, the teacher-pupil ratio shall be 1:30, an improvement over the

present national norm of 1:40 (Gujarat Education Vision 2010, www.gujarat-education.gov.in).

No dilution has been suggested in terms of teachers' qualifications. Currently, the minimum qualification for a primary school-teacher is HSC and we retain it.

Judgment of the quality of education¹⁰ should be left to the parents, community opinion-leaders, and in a way, to the market (as reflected in voucher transactions). No examination should be conducted to assess the quality of education.

The government shall provide educational vouchers¹¹ (Rs 100) to all students. These vouchers can be used to pay school fees. The voucher cost for one lakh children will be Rs 12 crore per annum. The teacher-entrepreneur shall collect the vouchers from the students. The vouchers shall be encashable by the recipient school-teacher at par in a nearby post office or bank. The voucher shall be made available to the parents/natural guardian through ration shops, local post office or local branch(es) of commercial banks (like recruitment stamp, or postal order). In order to minimise corruption,¹² the vouchers can be encashed by the teacher after obtaining the signature/thumb impression of the mother of the child.

Parents/natural guardians shall have the right to choose schools. At any time, even in the middle of the academic session, they can shift their wards to another 'performing' school under this framework. Under the system, schools that do not perform will lose their students and their funding. The freedom to exercise the option of quitting a school and joining another will keep the teachers on their toes, on the one hand, and save the child from the irrecoverable loss in terms of time.

In order to maintain transparency, the movement of vouchers should be available on the internet, in a system similar to that of the railway reservation system.

The existing primary schoolteachers and other state/district/block-level functionaries of the education department should not feel threatened by this model. The model presumes that their job will continue with a higher level of responsibility. The existing schools along with their teaching staff shall be upgraded to upper primary or secondary schools. The same teachers shall continue to teach the upper primary level students in existing schools leading to an improved teacher-pupil-ratio with a lessened burden of small age-group children. Existing government functionaries shall

continue to supervise the education department in the same manner. They shall have extended zone of influence in terms of number of schools.

The parents shall be empowered by receiving educational vouchers available free of cost. In a way, a mutually enforcing bonding shall emerge between 'empowered guardians' and 'enterprising teachers, hitherto unemployed educated youth'. This synergy may lead to a 'literacy boom' in the country at least among children.

The political class – from the central to panchayat level – shall be happy to fulfil its constitutional obligation without spending 'extra money'. Learners will be happier to go to a school where no examination is conducted.

However, opposition from vested interests such as private management schools and the bureaucracy cannot be ruled out. We leave this issue to be handled by the political leadership.

The teacher entrepreneur needs no supervision in a rigid sense. Teachers' sincerity of purpose shall be under the constant scrutiny of 'voucher empowered parents'. The inbuilt competition in the model is expected to bring about substantial improvement in teachers' attendance. They may need some guidance in terms of curriculum design and improvement in teaching methods. The state education boards and freelancing NGOs can take care of this need.

The workability of such a model depends critically upon funding.¹³ The construction cost of one school (four blocks X two rooms) has been estimated (at Rs 30,000 per room¹⁴) to be Rs 2.40 lakh. This cost can be brought down.¹⁵ The government of India has already undertaken a massive programme of dwelling construction in rural areas under the Indira Awas Yojana. To begin with, a small amount of funding can be diverted from this scheme towards constructing school buildings in needy villages.

The voucher cost for one lakh children at the rate of Rs 100 per month is estimated to be Rs 12 crore.¹⁶ For 240 students (the maximum number in one unit of four blocks) this amount comes to Rs 24,000 per month. The state can start this project forthwith in rural areas that are not covered by the existing system. However, we don't recommend it as a supplementary exercise. In due course, the existing system shall have to be replaced altogether.¹⁷

Assuming that 30 million students are eligible for such primary schools, the annual voucher cost comes around Rs 3,600 crore. It is not a big bargain for preparing the nation for 'the third wave revolution' in Alvin Toffler terminology.

We reluctantly discuss the employment potential of this model, as the issue under consideration is 'illiteracy' not 'unemployment'.

However, as an attendant social benefit, it is estimated that around 33,000 teachers and currently educated unemployed youth per one lakh children can be absorbed at a monthly income of Rs 3,000. In rural areas this is a significant amount which may help arrest the rural-urban migration to some extent.

Conclusion

This model fulfils all the three objectives of universal access, universal retention, and universal achievement (table).

The present model (3-T model), as presented in the preamble earlier, fulfils all the needs for progress in terms of primary education by being an interactive partnership business model with two primary schools in four adjacent buildings run by four enterprising teachers. It plays a major role in improving the literacy rate. At the same time the number of dropouts will be reduced significantly because of the flexible time schedule. This viable, cost-effective and sustainable model being free from bureaucratic interference achieves its goal of direct assistance for eligible people. The 'prime education' in primary education becomes accessible through vouchers and promises quality due to its inbuilt choice for beneficiaries. The model promises an overall progression in primary education by an increase in the number of schooling days, a significant decrease in dropout rate and guaranteed decrease in teacher absenteeism. It even requires less expenditure to fulfil the constitutional obligation of education for all. Thus, the model is more appropriate for rural India than present structures of primary education. [PT]

Notes

[The authors acknowledge their motivation to build this model to the engaging debate between two spirited citizens – Amartya Sen and Swaminathan S Anklesaria Aiyar.]

- 1 According to Probe report (1999), India has an estimated 50 million children out of school, about a third of the world's total.
- 2 There are many innovative parallel systems being established, prominent among which are Shishu Shikshan Kendra (WB), Education Guarantee Scheme (MP), Charbaha Vidyalayameadow school (Bihar), DPEP (Guj), Shiksha Karmi Project and Lok Jumbish (Raj), and AIE Scheme (Orissa). Many of these schemes are facing the problem of stagnation and sustainability.
- 3 Chen (2002): "Two challenges of these parallel systems are operational effectiveness and

Table: Comparison of 3-T Model with Present System

Quality of Education Depends on	Present System	3-T Model
Curriculum	Prescribed by the state	Prescribed by the State
Teacher's qualification	HSC	HSC
Schooling days	150	300
School hours per day	5 hours	4 hours
Environment and ambience	Closed, unclean and unpleasant at many places.	Open, airy and clean everywhere.
Teachers' absenteeism	Quite rampant 33 – 75 per cent	Nil
Quality of supervision	Unsatisfactory	No longer relevant as teacher's involvement is guided by self-interest.
Teacher-pupil ratio	1:40	1:30
Disruption in teaching	Frequent, as teachers are assigned additional work w r t census, family planning, election work, etc.	Nil, teachers no longer remain government servants.
Dropout cases	Quite alarming	Expected to reduce significantly due to enhanced accessibility, constant persuasion by teacher entrepreneur, flexibility in attendance rule, absence of exam-stress.
Other advantages		
(a) Per student expenditure	Rs 2,800 per year	Rs 1,200 per year
(b) Coverage	94 per cent	100 per cent
(c) Playground	Not available at many places.	Available everywhere
(d) Student's achievements	Highly unsatisfactory	Expected to maintain the state-prescribed minimum level of learning.
(e) Scope of corruption	More	Less (negligible).

Note: The information regarding the present system has been compiled from various sources mentioned in the References.

system sustainability. For the longer term, there are issues of sustainability in the evolution of the formal and informal systems as well as the private and public systems.

Vimala Ramachandran, in 'Community Participation in Primary Education: Innovations in Rajasthan, *EPW*, June 23, 2001 writes, "Rajasthan has the distinction of being the home of a range of highly visible innovations in primary education and women's development. ...Sustainability of innovation has remained a problem in the state. ...People across the country are asking about the sustainability of innovations, especially when the bureaucracy does not wholeheartedly endorse such innovations. Rajasthan seems to be more susceptible than other regions of the country. Is it because the administrative culture of the state is still feudal and rooted in individual charisma and loyalty?"

EPW editorial (August 25-31, 2001), 'Primary Education: New Labels for Old', But in Orissa not only did the NFE not take off, the state government's other educational schemes - expansion of 'Operation Blackboard' to cover more primary and upper primary schools, extension of DPEP to more districts and a separate education package for backward areas - have achieved little success. ...the government admitted that the implementation of the programme had been extremely tardy and that just 14.18 per cent of the funds had been utilised.

- 4 India's parliament in November 2001 passed unanimously the 93rd constitutional amendment assuring all Indian children of the basic right to elementary education.
- 5 The ability to read and write, as mentioned in this paper, is in the spirit of prescribed minimum level of learning (MLL) at the primary level.
- 6 A saying in Tamil 'Ennum Ezuthum Kan Ena Thagum' meaning numbers and letters are two eyes of a person.
- 7 Anklesharia-Aiyar (2002): "In countries like China teachers are hired on renewable three years contracts. Teachers that perform can get double promotions, drones can be sacked."
- 8 For an engaging debate between Sen and Swami over the issue of private tuitions read 'Amartya Sen Revisited', *The Times of India*, November 24, 2002.
- 9 *EPW* editorial op cit. The teachers (under Orissa's NFE Programme) have been working on a meagre salary of Rs 200 per month since 1996, many of them in remote, inaccessible districts of the state.
Chen, op cit SSK teachers are mostly females, appointed and supervised by the community, and paid about Rs 1,000 monthly, manifold less than formal teachers. Informal systems over time will have to address the severe disparity in teacher salaries.
- 10 Chen, op cit. "The Pratchi and BRAC surveys both underscored worries about educational quality, curricular content, and child learning. Of grades three and four students who did not obtain private tutoring, only 7 per cent could write their names in West Bengal."
- 11 Swaminathan S Anklesharia Aiyar, op cit

writes: "Educational vouchers are an alternative way of empowering students. The government can give all students educational vouchers, usable to pay fees in schools of their choice. Private schools should compete with government ones for students. Parents will be empowered by the right to choose schools. Schools that do not perform will lose their students, and their funding."

- 12 As it involves public fund, the possibility of 'hand-in-glove' misappropriation by an ignorant guardian, a greedy teacher, and a cut-addict functionary of the state does exist.
- 13 The Tapas Majumdar committee laid out the macro-level financing picture, recommending that investment in education be increased from the current 3.8 to 6 per cent of GDP. With nearly all state governments running up huge fiscal deficit (debt burdens), finding the extra funds will not be easy. Yet, an expansion of public budgets for education, even modest levels for critical inputs, is essential.
- 14 Construction materials-bricks 10,000; cement 45 bags; stone chips 4 brass; iron 4 quintals. Sand, etc, as required.
- 15 The cost can be reduced by opting for thatched/tiled roof in place of RCC roof; half-wall in place of full walls.
- 16 In Bangladesh, BRAC, a non-governmental organisation, has developed 'informal' schools for children that now service 1.1 million children at \$ 19 (19X 47=Rs 893) per student per year. In our case it is Rs 1,200 per student per year.
- 17 Private entrepreneurship is an indispensable ingredient in economic development over the long term. However, in present context, private entrepreneurship may be reluctant to undertake the risks associated with new ventures in rural areas.
According to the Public Report on Basic Education in India (PROBE - 1999) in many of the sample villages, private schools are a flourishing business.

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Relevance of Education in Contemporary Indian Society

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Sociological Foundations of Education

Education is now regarded as a social dynamic and progressive process, which aims at achieving social planning, social change and social reconstruction. Therefore, social consciousness is the essential base of education. All these aspects belong to educational sociology.

Definition of Educational Sociology

Following definitions of some well-known scholars make the meaning of educational sociology clear:

- "Educational Sociology is the study of interaction of individual and his cultural environment including other individuals, several groups and pattern of behaviour." - Brown
- "Educational Sociology starts with the assumption that education is an activity which goes on in society and the society in turn determines the nature of education." - Ottaway
- "Educational Sociology is the scientific study of how people live in social groups, especially including the study of education that is obtained by the living in the social groups, and education that is needed by the members to live efficiently in social groups." - Good

Education in Indian Social Context

On the one hand, one finds numerous groups in contemporary Indian society, distinguished from each other on the basis of language, religion, race, caste, tribe, geographical location etc., while on the other, one also finds distinct economic classes. The processes of secularization, westernization, acculturation, industrialization and urbanization have led to remarkable changes everywhere. The impact of the West is evident enough, but it is accompanied by frantic attempts to rejuvenate ancient Indian values.

Increasing political awareness is another factor, which is clearly evident. The most clear outcome of the interaction of all these tendencies is that the young generation has been presented with fantastic variety of alternatives and differences of opinion.

This disorganization of values is manifested through such undesirable activities as discipline, juvenile delinquency, pessimism, destructive and murderous tendencies, etc.

In such situation, the first duty of the educational organization is to supplement the clear presentation of all possible alternatives before the younger generation with active encouragement in the choice of one alternative, so that there is some positive guidance.

Hence, education must not merely inculcate secularism, realism and liberality in the educand, but must also provide him with the ability to distinguish the right from the wrong. The young people are subject to a

multiplicity of influences emanating from various sources, and for this reason it is essential that there should be some unity in all this diversity.

The first step in this direction is the creation of character, which will grant an adolescent the determination to be guided by his own opinion. It is essential that old and traditional values be explained to the younger generation in the interest of continuity with the older generation, but this should not preclude consideration of new values, which can lead to progress and development. Education can thus fulfill the needs of society only if it adopts a comprehensive and dynamic curriculum, a dynamic methodology of teaching and a dynamic philosophy of education.

Education : Key to Development

Human resource development has been assigned a key role in India's development strategy. The resolution on National Policy on Education adopted in 1986 called for radical reconstruction of education so that it involved (i) a transformation of the system to relate it more closely to the life of people; (ii) a continuous effort to expand educational opportunity; (iii) a sustained and intensive effort to raise the quality of education at all stages; (iv) an emphasis on the development of science and technology; and (v) the cultivation of moral and social values. According to the resolution, the educational system must produce young men and women of character and ability committed to national service and development.

Progress of Education

There has been a great deal of accomplishment in the field of education since independence. The number of schools increased from 2.23 lakh in 1950-51 to 8.39 lakh in 1999-2002, the number of teachers in these schools went up from 6.24 lakh in 1950-51 to 32.17 lakh in 1999-2002, and the number of universities going up from 25 to 227 in the same period. The country has 259 universities and the enrolment of students in these universities is over seventy-four lakhs with 3.42 lakh teachers. The National Policy on Education, 1986 as revised in 1992, in fact, aims Universalisation of Elementary Education (UEE) - popularly known as Sarva Shiksha Abhiyan with the result that to day there is a primary school for 94% of rural population within a distance of 1 km and upper primary school within a distance of 3 km for 84% of the rural population. The literacy rate has increased from 52.21 in 1991 to 65.38 as per 2001 census.

Today education is considered pivotal for social

and economic development through development of human resources. Efforts are being made to make free and compulsory education for children from 6-14 of age a Fundamental Right. This is reflected in the National Policy on Education, 1986 and in the budgetary allocation of resources. The ninth plan outlay on education (Centre and State) at Rs. 20,381.64 crore is higher than the eighth plan expenditure of Rs. 7,443 crore by 2.7 times. In keeping with set-up, the Central Plan outlay for education has been substantially increased from Rs. 1.825 crore in 1995-96 to Rs. 5,920 crore in 2001-02.

The thrust areas viz., adult literacy, primary education, decentralization of management of education and technical education, have been identified to achieve universalisation of the Elementary Education to make education relevant to the needs of the community and also to meet new challenges of liberalization and globalization of the economy.

Literacy Levels

Ever since Independence, elimination of illiteracy has been one of the major concerns of the government. However, in view of country's vast size, huge population and limited resource position, not much progress could be made in this direction. Thus even in 2001, the literacy recorded an increase by 13.17% as the figure in 1991 was 52.21%. The following tables show the literacy rates for male, female and total population since 1901.

Table 1 : Literacy Rates of Male, Female and Total Population of India—1901-2001

Year	Male	Female	Total
1901	9.8	0.6	5.3
1911	10.6	1.1	5.9
1921	12.2	1.8	7.2
1931	15.6	2.9	9.5
1941	24.9	7.3	16.1
1951	27.2	8.9	18.33
1961	40.4	15.4	28.30
1971	46.0	22.0	34.45
1981	56.38	29.76	43.57
1991	64.12	39.29	52.21
2001	75.85	54.16	65.38

Even though Indian educational scenario, over the past few decades, has been characterized by massive quantitative expansion at all levels, it is still faced with staggering backlog of high illiteracy levels of over 47% in 1991. The attainment of the goal of universal

elementary education still remains a distant possibility. Concerted efforts have, therefore, to be made to wipe off illiteracy in the shortest possible time in the country, has to take rapid strides in its socio-economic development. With this in view, several schemes and projects have been taken up to eradicate illiteracy and promote education among the masses.

The National Policy on Education, 1986

The National Policy on education, which was approved by parliament in 1986, seeks to establish, for the first time in free India's history, a National system of education, which lays down an overall curricular framework and a core curriculum to establish comparability of competence at the end of various stages of education all over the country, reinforce the integrative aspect of society and culture and also establish a value system necessary for an egalitarian, democratic and secular society. The new policy presents the problem of socio-cultural inequalities in a very sharp focus and lists the specific steps in such details that it could be described as nothing less than a charter, not only for equality of access to education, but also for equalization with regard to the status of disadvantaged sections of society. It lays down that educational transformation, reduction of disparities, universalisation of elementary education, adult education and scientific and technological research would be accepted as national responsibilities for which the provision of adequate resource support will be the concern, not only of the State Governments, but of all the agencies which are collectively responsible for national development.

The revised programme of action 1992 of the NPE, 1986 resolves to educate all children up to 14 years.

National System of Education

The concept of a National System of Education implies that up to a given level, all students, irrespective of caste creed, location or sex, have access to education of the comparable quality. The National System of Education envisages a common educational structure. The 10+2+3 structure has now been accepted in all parts of the country. Regarding the further break up of the first 10 years, efforts will be made to move towards an elementary system comprising five years of primary education and three years of upper primary, followed by two years of high school.

The National System of Education will be based on a national curricular framework, which contains a

common core along with other components that are flexible. The common core will include the history of India's freedom movement the constitutional obligations and other contents essential to nurture national identity. These elements will cut across subject areas and will be designed to promote values such as India's common cultural heritage, egalitarianism, democracy and secularism, equality of the sexes, protection of the environment, removal of social barriers, observance of the small family norm and inculcation of the scientific temper. All educational programmes will be carried on in strict conformity with secular values.

Minimum levels of learning will be laid down for each stage of education. Steps will also be taken to foster among students an understanding of the diverse cultural and social systems of the people living in different parts of the country. The young will be encouraged to undertake the rediscovery of India, each in his own image and perception.

The nation, as a whole, will assume the responsibility of providing resource support for implementing programmes of educational transformation, reducing disparities, universalisation of elementary education, adult literacy, scientific and technological research, etc.

In order to operationalise the revised policy of the government, the following three sub-schemes were proposed under "Operation Blackboard" during the Eighth Plan: (i) Continuation of the on-going scheme to cover all the remaining schools, (ii) scope of the scheme to provide three rooms and three teachers in primary schools with provision for about 50% women teachers in primary schools as mandatory for all the states / UTs; and (iii) extending the scope of the scheme to upper primary schools.

Primary Education

Following the directions given by National policy on Education 1986 (revised in 1992), primary education was given an over-riding priority in order to realize the goal of UEE during 7th & 8th plans. Despite this, backlog has continued in enrolment and dropout rate is still high. Two major initiatives taken during the 8th plan, District Primary Education Programme (DPEP) and Nutrition Support to Primary Education (Mid-day Meals) have arrested these trends to some extent. However, there is still a long way to go to achieve UEE. The National Literacy Mission with a mandate to make 100 million people literate had achieved only just over 50% success (56.1 million) by 1996.

During the ninth plan, keeping in view the declaration of education as an aspect of fundamental human right, around 6% of GDP was earmarked for education by the year 2000 and 50% of that was to be spent on primary education.

School Education

The school level education is primarily looked after by the State Governments. Many of the States and Union Territories have enacted legislation for compulsory primary education. However, in view of the vast numbers involved and the socio-economic compulsions keeping children away from the schools, it has not been possible to fully enforce this legislation.

Operation Blackboard

In pursuit of the goal of universalisation of elementary education, the Operation Blackboard scheme has been formulated with a view to bringing about substantial improvement in primary schools run by the government, local bodies and recognized aided institutions. The Operation Blackboard scheme has three components, viz.,

- Provision of at least two all-weather rooms.
- Provision of at least two teachers, one of them preferably a woman, in every single teacher primary school; and
- Provision of essential teaching and learning material including blackboards, maps, charts, a small library, toys, games, sports material and some equipment for work experience. It was proposed to implement the scheme of Operation Blackboard in a phased manner covering all the primary schools by the end of the year 1990.

National Open School

The National Open School was established in 1989 and provides opportunities for continuing their education to students who had to discontinue it in regular schools for one reason or another through their foundation, secondary and senior secondary courses. At present, there are more than five lakh students on their rolls. The Pan Commonwealth forum on learning conferred Learning Award of Excellence on National Open School in March 1999 in Brunei Darussalem. In the year 2002 the National Open School was converted into National Institute of Open Schooling.

Navodaya Vidyalayas

The National Policy on Education provides for opening of residential schools for the talented children.

These schools are named Navodaya Vidyalayas. It is proposed to establish Navodaya Vidyalayas in each district of the country. The Navodaya Vidyalayas are aimed at providing opportunities to the talented children to develop their full potential and to promote national integration.

Education in Navodaya Vidyalayas is provided free of charge. Admission to Navodaya Vidyalayas are made at the level of class VI on the basis of an admission test, designed by the NCERT. An autonomous organization known as Navodaya Vidyalaya Samiti has been set up to establish and run these vidyalayas.

Adult Education

The National Policy on Education, 1986 envisages that the whole nation must pledge itself to eradication of illiteracy, particularly in the 15 - 35 age group. Now the programme aims to impart functional literacy to 100 million adult illiterates in the age group of 15-35 (including age group of 9-14 where NPE is not in operation) by 1997. To achieve these targets, the major strategies to be adopted include reorganization and strengthening of the existing schemes of adult education, launching of mass programme of functional literacy, organization of various programmes of continuing education, strengthening technical resource and mounting of a technology mission for eradication of illiteracy.

Total Literacy Campaigns have been launched in 401 districts of the country covering over 139 million illiterate persons and 166 districts have commenced post literacy backward states of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh (BIMARU).

Technical Education

Technical education system is to produce trained manpower in adequate numbers for the economic development of the country. The facilities of education and training in the areas of engineering and technology, therefore, been expanded systematically. Training has also been diversified and programmes modified to take care of the needs of the modern development in technology. Activities have also been extended for application of science and technology to rural development for establishment of linkages between different groups of technical education system and the development sectors. The area of emerging technologies such as informatics, telematics, educational technology, micro-electronics, robotics, water resource management, energy studies, etc., are receiving special attention for development.

Among the premier institutions imparting technical education are: Indian Institute of Science Bangalore; Indian School of Mines, Dhanbad; National Institute of Training in Industrial Engineering, Mumbai; National Institute of Foundry and Forge Technology, Ranchi; School of Planning and Architecture, New Delhi; Administrative Staff College of India, Hyderabad; four Indian Institutes of Management at Ahmedabad, Bangalore, Calcutta and Lucknow; four Technical Teacher's Training Institutes at Bhopal, Calcutta, Chandigarh and Chennai; five Indian Institutes of Technology at Mumbai, Delhi, Kanpur, Kharagpur and Chennai; and 17 Regional Engineering Colleges spread all over the country. There are over 1058 AICTE approved technical education institutions at the first-degree level and about 1215 polytechnics at the diploma level. The intake in Engineering Colleges in 2001-2002 was 2,71,719. Facilities also exist for post-graduate studies.

Growth of Higher Education

In the fifty years since India gained independence, its higher education system has shown remarkable growth. It may be noted that since independence:

- The number of university level institutions has increased from 18 to 229 and of colleges from 591 to about 8000
- The percentage of liberal arts colleges has increased from 77.66% in 1947 to 82.91 in 1996; and the percentage of colleges in professional disciplines has correspondingly decreased from 22.34% in 1947 to 17.09% in 1996.
- The number of students has increased from a little less than 0.2 million to about 5 million. The annual growth rate which averaged as much as 27.7% during the first decade after independence fell to 5.9% in the second decade. It increased slightly to 7% in the third decade and then again fell to 6% in the fourth decade. It has slowed down to 3.5% in the last nine years.
- The number of students in professional education has increased from about 46 thousand in 1947 to nearly 550 thousand in 1996. Though there is a substantial increase in absolute terms, the percentage of students in professional education has actually decreased from 19.94% in 1947 to 9.93% in 1996.
- Approximately 88% of the students in Indian higher

education are in undergraduate programmes in the liberal arts. Enrolment in the faculty of Arts (including Social Sciences) has now established at about 40% after having reached a peak of nearly 45% in 1975-76. The enrolment in Science faculty has come down from about 30% in 1960-61 to only 19.6% in 1992-93. Enrolment in the Commerce faculty which is showing a steady increase is now about 23%. Enrolments in Engineering and Technology and in Medical faculties are respectively about 4.9% and 3.4%. The number in Agriculture and Veterinary Science is low, about 1.5%.

The rapid growth of higher education and the raised expectations regarding its role in nation building have highlighted many issues including those of access and equity. The progress made with respect to these aspects need to be reviewed.

Distance Education

In India, at the tertiary level, distance education was initiated in 1962 in the form of correspondence courses started by the University of Delhi. The first Open University was established in Andhra Pradesh in 1982 and the Indira Gandhi National Open University was established in 1985. The distance education system has grown substantially since then and today there are 8 open Universities and 59 Correspondence Course Institutes (CCIs) attached to different universities. The CCIs initially provided largely correspondence programmes with occasional contact programmes. However, with the establishment of open universities the methodologies of instruction and assessment have substantially changed. The open universities are following rigorous instructional designs in the development of materials and imparting of instructions. The universities provide regular counseling services through networks of study centers and make use of the electronic media. The Indira Gandhi National Open University, which has the dual responsibility of providing open distance education and coordinating the distance education system (including the state open universities), has devised a large media networking and teleconferencing system to electronically link all distance teaching institutions in the country. OPENET (Open Education Network) is poised to facilitate voice, image and data transmission through two-way audio and video-conferencing. What is now required is an integration of open education provided by open universities with the distance education programmes

of CCIs through networked collaboration between them.

It is visualized that in near future each state in the country will have an open university and that about 50% of the total future intake in higher education in the country will be catered to through the open system. The latter can take care of the needs of all those who desire a liberal arts education. There is optimism that open universities can also offer effective programmes in management and technology. The open universities have not taken the fact that the prevailing model of higher education, requiring selective learning over a specified period of time, is being slowly replaced by the model of lifelong learning for all. Their programmes include those on industrial and related training, extension education and continuing education in professional areas. The open universities, in network with CCIs, plan to cater to the educational and training needs of about 2 million people. It is evident that open and distance education will have to play a major role in meeting the demand for higher education in India.

Relevance

The relevance has a direct bearing on the projected human power need of our country. This is vital issue because bulk of student population, around 83%, in formal education is in traditional disciplines like Arts, Science, Humanities and Social Sciences, Law and Commerce. The relevance, for past several plans, has been synonymous with clubbing of vocational subjects in conventional education system. This has drawbacks as it eats on the core subjects and introduces professional subject matter at a marginal level. Thus the output is neither sound in core subjects nor is skilled in vocational subjects, thereby we get graduates who are neither accepted by the industry nor can they become entrepreneurs. The emergence of knowledge-linked societies in a new economic environment demands for graduates sound in their fundamentals with analytical abilities and enriched with appropriate utility-oriented skills. We have come out of good old concept of hybridizing vocational subjects into overburdened three-year structure and think of more dilated definition of relevance. This means we will have to think of open and flexible education approach where students can pursue simultaneously a degree and add-on utility-oriented programmes that would allow the student to acquire an advanced diploma along with a degree or go for one more year of intensive professional

subject learning and get two degrees at the end of four years. The convergence of open and conventional education is going to be of help in this aspect also.

The relevance has got other dimension also, especially with reference to marginalized sections in the society. For them, enhanced access to education and that too in emerging disciplines, be it computers or information technology, or biotechnology or applied psychology and so on, is of importance and therefore, floating of large number of skill-oriented courses and wide spread of them across all colleges in conventional education is a must in the tenth plan. Here also, ICT network is crucial. Thus, the tenth plan needs to induce universities to go for degree plus diploma and dual degree mode. The relevance achieves a greater significance at postgraduate level. Just like undergraduate level, masters' degree with sound foundation is a necessity. This means no compromise should be done in respect of intensive teaching in core subjects. In addition, training in emerging interdisciplinary fields with acceptance of credit based 'cafeteria' approach with modular structure is more important in the present era. This is need for sustaining our growth and development as well as for retaining our global identity. The postgraduate teaching in colleges needs special attention. We need to give more grants to these PG centers to improve their infrastructure. Moreover, they need to be activated for effective use of information network for enhancing standards in teaching.

This brings us to research. The university departments have to have research on their agenda at a priority level. Tenth plan must send clear signals in this respect and go in for higher magnitude of funding in an organized manner for supporting research at an individual level, at a group level and also at departmental level. We need to establish research council, with built-in functional autonomy, in UGC for this purpose. Inter University Centres have proved to be useful institutions for young researchers and they need to be further supported in the tenth plan. We need to go for more of such activities in may new areas in the field of pure sciences as well as humanities. The proposed UGC connectivity network in the tenth plan, would help, through mirror sites, for access to research material through repository of digital database.

The undergraduate education in pure sciences is a matter of serious concern. This is more relevant for giving strong thrust to research, which is so vital for our science and technology independence. We are going

to face shortage of good researchers in a few years time, particularly in our premier research institutions in the field of atomic energy, space, biotechnology, energy, oil exploration, communication and so on. We will have to focus at the Ten Plus Two and catch them young for integrated five-year teaching programme with a possibility of exit after three years. We will have to adopt following multi-pronged attack to achieve this:

- To identify and support a few universities to do undergraduate teaching on the campus.
- To identify and support a few colleges to do undergraduate education in credit based modular approach.
- To establish a few national level institutions, in collaboration with national level research laboratories, for doing five year integrated teaching programme with a research blend. Good science graduates is a need of all our major research establishments like DAE, ISRO, DBT, DRDO, CSIR and others. UGC could formulate collaborative strategy with these agencies to achieve this.

Information Technology and Communication

One also needs to create and use information and communication network linking all the colleges and universities. This would ensure uniformity in access to teaching material and help teachers to supplement their teaching in the classroom by cleverly blending it with multimedia support material on a particular topic, or giving feel of demonstration experiments being done in well equipped laboratories, or listening to expert from India and abroad. The innovative use of information network would 'virtually enhance the academic infrastructure' in the classroom and that too in a cost-effective way. We need to train and encourage teachers to develop multimedia material.

Conclusion

Looking back, during the last fifty years, the Indian higher education system has undergone many important changes; the most significant being its unprecedented growth and its consequent transformation from an elite system to a mass system. The fact the higher education is available to the masses, including the underprivileged and weaker sections of society, is an achievement. It is also creditable that we have been able to create some undoubted centers of excellence. However, the

system has not been able to change its organizational structure and form. Nor has it been possible to maintain uniform standards of education or ensure that education imparted is relevant to our present needs. Under the circumstance, it is necessary that we make systematic changes that will enable the implementation of academic reforms.

The different commissions and committees that have examined the Indian higher education system, after independence, have identified by the maladies that affect it and have also suggested remedies. However, we have failed to follow up on the recommendations. The maladies identified by the Kothari Commission over three decades ago still exist. The latest example of our indifferent approach is the half-hearted manner in which the programme of action, 1992 is being implemented. As Valiathan (1993) points out "knowing what to do it has cast a shadow on (our) national endeavours".

Altbach (1993) perceives the Indian educational system to be a great monolith, with a core of inadequacy, possibly incapable of change margined by a rim that has shown significant change and has developed. The better-known institutions, comprising the rim, are perhaps capable of taking care of themselves. We will have to concentrate our attention on improving the infrastructure and facilities in the less privileged institutions. The colleges deserve greater attention. If there is to be academic revival it will be necessary to grant greater degree of autonomy to the universities and colleges, implement examination reforms, reduce administrative obesity and improve its efficiency. There has to be greater commitment on the part of all stakeholders. The open universities have an important role to play in the future and they must be found for the colleges and universities. Whether these resources are to come from the government or industry or other sections of society, is a matter that has to be decided quickly.

Finally, the importance of the role of a teacher as a catalyst and a change agent has become more critical today than ever before. In the context of rapidly changing global economy, it is imperative that the teachers update their knowledge and skills and be conversant with new technologies and tools for use in the classroom. Lifelong education has become the key factor for success in a world where information is power knowledge a dominant factor. Indeed, as we enter the new millennium, the takes and responsibilities of teachers are assuming new significance. □

Skill, Education and Employment

A Dissenting Essay

Unemployment is attributed to labour market deficiency in terms of shortage of skilled and educated labour force rather than to the deficiency of aggregate demand. This paper argues that an attempt to correct macro-policy distortion through micro interventions, would, in the skill hierarchy and job competition models, have the consequences of overcrowding, bumping down of low skilled workers and create rather a larger pool of surplus skilled as well as unskilled labour force. The demand constrained economy of India needs a better policy perspective for manpower planning.

C S K SINGH

I Introduction

In the post-liberalisation and structural adjustment phase in India the problem of unemployment is sought to be resolved through skill training and education of workers. Emphasis is laid on not only educating and skilling the workers but also on a continuous process of skilling, re-skilling, multi-skilling and skill modulation. Two notable policy documents that have recently appeared, namely, the study group report on *Skill Development, Training and Workers' Education*, of the National Commission on Labour (2002) and the report on *Targeting Ten Million Employment Opportunities Per Year*, of the Planning Commission (2002), argue on the same line. Further, the Indian Society of Labour Economics, a reputed professional body of labour economists in its recent annual conference devoted one full theme to skill and education. Almost all the papers suggest, in one way or the other, that skill and education [ISLE 2002] are really the answer.

How effective should be the dose of skill and education depends on the nature of unemployment in the first place. If we assume that there is really a reallocation of labour following the structural adjustment programme, then unemployment has to be viewed as only a frictional unemployment caused by the reallocation. And if there is a mismatching between the unemployed and the available jobs in terms of regional location, required skills, etc., the nature of unemployment can be structural only. Relatively a long duration frictional unemployment could, for policy purpose, also be treated as structural unemployment. In both cases however the number of jobs would equal the number of unfilled job vacancies. So, skill and education will provide jobs only to that portion of the labour force which will respond to the unfilled vacancies caused by factors either frictional or structural in nature. This would be possible because of the availability of the equal number of unfilled vacancies. But in a chronic unemployment situation as seen in India with a formidably large invisible unemployment, a prescription of the above kind would mean adding to the oversupply of skilled and educated labour in the face of aggregate demand constraint.

With this backdrop I argue in this paper on the following lines: (a) Skill and education have not shown themselves in any significant way to be a path finder of employment. I find a strong linkage between skill and education. But rather, closely associated pair of skill and education is strongly linked to

unemployment.

(b) The above phenomena become far more visible at higher levels of education and still more in the case of technical education.

(c) There are also reasons to argue that education has not even contributed to labour mobility in terms of change of industry and change of occupation.

(d) Even the claim of employability resulting from skill and education is questionable.

(e) The argument that there is a shortage of skilled workers is also not tenable.

(f) An attempt to correct macro-policy distortion through micro-interventions by way of increasing the supply of skilled and educated workers would, in the skill hierarchy and job competition models, have the consequences of over crowding and bumping down of low skilled workers, and creation of rather a larger pool of surplus skilled as well as unskilled labour force.

(g) Finally, I suggest that the technological policy that exists as such, kills rather than creates jobs.

Structure of the Paper

This paper is structured in the following manner: Section II indicates the broad features of the NSSO's skill composition. Section III finds the interlinkage between skill and education in the case of (a) labour force (b) non-workers. In Section IV unemployment by different levels of education is examined. Unemployment of different types of skilled workers is dealt with in Section V. Section VI uses the data on occupational mobility/labour mobility by level of education as proxy indicators of employment opportunity resulting from education. Section VII takes up the issues of employability and the argument of skill shortage. Section VIII examines the technological policy and employment possibilities. Finally, the last section summaries the adverse consequences of skill explosion.

II Skill Composition

To situate the ensuing discussion in a right perspective we begin with some of the salient features of the NSSO's survey pertaining to skill (Box 1 and Box 2). Those are as follows:

- (a) 'Skill' as defined by the NSSO means any marketable expertise however acquired, irrespective of whether marketed or not, whether the intention is to market it or not.
- (b) A person who has acquired a certificate or diploma in an appropriate subject is enumerated as skilled along with the person who has acquired the skill without obtaining any such certificate or even without attending any institution.
- (c) If a person has acquired skill in more than one trade, skill in which that person is more proficient is considered to be his/her skill.
- (d) It is striking that there is no common list of skills. The skill composition in the case of workforce differs from the skill composition of the non-workers.
- (e) The 50th round of the NSS informs us of the stock of skilled labour force but the 55th round informs only of the skill composition of the non-workers.
- (f) The skill codes in the 50th round are in all 30, whereas in the case of 55th round the total number is 41. In the former, washerman and craftsman have been excluded but in the latter they have been included. Silversmith in the 50th round has been coded separately but in the 55th round both silversmith and goldsmith have been assigned a common code. Word processor, computer programmer and data entry operator are fresh additions in the 55th round under three different skill codes.

III

Skill and Education Interlinkages

We have noted above that the 50th round of NSS on employment and unemployment provides for proportion of labour force (both employed and unemployed) by level of skill and education. But in the case of 55th round we are informed of the non-workers (unemployed) only by level of skill and education. So the comparability between the two data sets is necessarily limited to the skill and education interlinkage. It is only this interlinkage which we propose to examine here both in the case of labour force and non-workers. In concrete terms, we seek to examine how the level of education influences the proportion of skilled labour force as well as proportion of skilled non-workers, across male and female workers both in rural areas and urban areas.

(a) *Labour Force*: It becomes abundantly clear from Table 1 that there is generally a close association between the level of education and the level of skill. With an increase in the level of education there is an increase in the proportion of the skilled labour force. So decrease in the level of education indicates decrease in the proportion of skilled workforce. This association

Box 1

Skill: typist, stenographer-01, fisherman-02, miner-quarryman-03, spinner including charkha operator-04, weaver-05, tailor, cutter-06, shoe-maker, cobbler-07, carpenter-08, mason, bricklayer-09, moulder-10, machineman-11, litter, diemaker-12, welder-13, blacksmith-14, goldsmith-15, silversmith-16, electrician-17, repairer of electronic goods-18, motor vehicle driver, tractor driver-19, boatman-20, potter-21, nurse, midwife-22, basket maker, wicker product maker-23, toymaker-24, brick maker, tile maker-25, bidi maker-26, book-binder-27, barber-28, mud house builder and thatcher-29, others-30, No skill-99.

Source: NSSO, 50th Round, 1993-94.

is pretty strong in the case of the secondary level educated cohorts across sex as well as across sector.

Thus, among the rural female and male non-literate workforce, the share of skilled workers is 5.1 per cent and 7.4 per cent respectively. In the case of both urban female and male the said percentage is 6.8(F) and 12 (M). The proportions of skilled workforce in the case of literate up to primary and middle compare quite unfavourably with those of secondary, higher secondary and above. In this regard a comparison between secondary level and higher secondary and above level suggests that in the case of both rural and urban female workforce the highest share of skilled workers is in the higher secondary and above group, 23.2 per cent and 26.3 per cent respectively. But among rural as well as urban male workforce it is the secondary level which has the highest proportion of skilled workforce, 18.4 per cent and 28.3 per cent respectively. However, in terms of persons, the variation between secondary and higher secondary and above level is marginal such that the ratio is 18.8:18.3 (rural) and 25.3:26 (urban).

(b) *Non-workers*: The 55th round (Table 2) shows a secular association between the level of education and the proportion of skilled and non-skilled non-workers. Thus among non-literate the proportion of skilled non-workers is lowest in all categories. It is 4.9 per cent and 2.7 per cent in the case of rural female and male non-workers respectively. In the urban sector the proportion of non-literate female skilled non-workers is 7.6 per cent and of male non-workers, 4.7 per cent. The two together (person) constitute 5.1 per cent in rural areas and 6.5 per cent in urban areas.

As the level of education increases the proportion of skilled non-workers also increases quite substantially. The highest concentration of skilled non-workers is observed in the high and the above educational level without a single exception. For example, from 16.2 per cent in the secondary educational level, rural female skilled non-workers show an increase of 22.6 per cent in the higher secondary and above educational level. Similarly, in case of male non-workers there is an increase from 7.8 per cent in the secondary level group to 14 per cent in higher secondary and above educational level. In the urban areas also there is an increase from 17.9 per cent skilled female non-workers in the secondary level to 22.8 per cent in the higher secondary and above level. In case of males such increase is from 9.3 per cent to 15.1 per cent.

With regard to rural persons, from 12.5 per cent at the secondary level skilled non-workers, it increases to 18.2 per cent at higher secondary and above educational level. In the case of urban persons the increase is from 14.4 per cent to 20 per cent.

Two important points emerge from the close association between skill and education as observed in the preceding discussion: (i) education serves as an enabling mechanism to acquire skill and (ii) unemployment in the case of skilled persons denote unemployment of both skilled and educated at the same time.

IV

Skill, Education and Unemployment

In the ensuing discussion, we propose to see the extent of unemployment in the case of different cohorts of the educated labour force. It will be followed by an examination of the unemployment of skilled labour force. To meet the first requirement, two different data sets will be scrutinised. First, unemployment by

level of education. Second, unemployment among educated youths specifically by level of secondary and above education.

(a) *Unemployment by level of education:* It is observed from Table 3 that instead of lower share in unemployment of the labour force of the higher educational levels, lower the level of education, lower is the unemployment rate. Among the non-literates it is the lowest. Quite contrary to it, the graduate and above cohort show the highest incidence of unemployment.

Obviously there is a demand bottleneck in the case of the educated labour force. The non-literates, literate up to primary and those at middle level education may not have anything to do with their educational endowment and rather education in their case did not become a restraining factor to underemployment. (b) *Unemployment by level of secondary education and above:* Table 4a depicts the unemployment rates amongst the educated youths by level of secondary education and above. It also demonstrates the unemployment rates among youths as a whole (Table 4b). The figures are quite telling. For our purpose it is not important that unemployment rates are showing a declining trend. What is really important is that as against the unemployment rates amongst youths as a whole the unemployment rates amongst secondary and above educated youths are formidably higher in all the successive rounds of the survey, be it rural, urban, or both combined.

V

Unemployment of Skilled Workers

(a) *Unemployment of NSSO skilled group:* Since the 50th round of the NSS (Table 1) informs us of the stock of skilled labour force, (both employed and unemployed) we are not in a position to see the interlinkages between skill and employment on the basis of it. However, from the 55th round of the survey (Table 2) we are informed of the proportion of skilled non-workers, i.e., unemployed. Nevertheless it is relevant to take stock of the skilled labour force first and then to see the quantum of the skilled non-workers.

It is observed from Table 1 that the proportion of the labour force with marketable skill is 8.3 per cent among the rural labour force and 15.6 per cent among the urban labour force. The distribution between female and male labour force is 6.8 per cent and 10.1 per cent in rural areas and 11.2 per cent and 19.6 per cent in urban areas respectively.

On the basis of the 50th round survey Mathur (2002) observes that the very fact that among the educated who do not possess any skill constitute above 69 per cent of the educated unemployed

underlines the importance of skill as job provider. He also points out that the remaining 31 per cent educated and skilled unemployed is nevertheless a matter of concern.

To us however, it appears difficult to make out a case that since among the educated those who do not possess skills constitute above 69 per cent of the educated unemployed and hence, had they been skilled, there would have been a reduction in the incidence of unemployment. To appreciate this point it is important to note that 'marketable skills' of the NSSO do not necessarily mean that those who possess skills have actually marketed their skills, and hence they are outside the non-worker category. To reiterate, the NSSO unambiguously states that for its purpose 'any marketable expertise however acquired, irrespective of whether marketed or not, whether intention is to market it or not, is considered

Table 1: Proportion of Labour Force (15 years and above) According to Usual Principal Status by Type of Skill Possessed for Each Broad General Educational Level (NSS, 50th Round)

	Not-Literate	Literate Up to			Higher Secondary and above	Total
		Primary	Middle	Secondary		
Rural						
Female						
Skilled	(5.1)	(6.4)	(12.4)	(19.8)	(23.2)	(6.3)
Unskilled	(94.9)	(93.6)	(87.6)	(80.2)	(76.8)	(93.7)
Male						
Skilled	(7.4)	(9.9)	(14.8)	(18.4)	(17.1)	(10.1)
Unskilled	(92.6)	(90.1)	(85.2)	(81.6)	(82.9)	(89.9)
Person						
Skilled	(6.0)	(8.5)	(14.0)	(18.8)	(18.3)	(8.3)
Unskilled	(94.0)	(91.5)	(86.0)	(81.2)	(81.7)	(91.7)
Urban						
Female						
Skilled	(6.8)	(7.4)	(15.4)	(20.7)	(26.3)	(11.2)
Unskilled	(93.2)	(92.6)	(84.6)	(79.3)	(73.7)	(88.2)
Male						
Skilled	(12.0)	(16.7)	(24.8)	(28.3)	(25.8)	(19.6)
Unskilled	(88.0)	(83.3)	(75.2)	(71.7)	(74.2)	(80.4)
Person						
Skilled	(8.9)	(12.4)	(20.8)	(25.3)	(26.0)	(15.6)
Unskilled	(91.1)	(87.6)	(79.2)	(74.7)	(74.0)	(84.4)

Source: NSSO, 50th Round, 1993-94.

Table 2: Proportion of Non-Workers (15 years and above) According to Usual Principal Status by Type of Skill Possessed for Each Broad General Educational Level (NSS, 55th Round)

	Not-literate	Literate Up to			Higher Secondary and above	Total
		Primary	Middle	Secondary		
Rural						
Female						
Skilled	(4.9)	(9.4)	(11.8)	(16.2)	(22.6)	(8.25)
Unskilled	(91.9)	(87.7)	(84.8)	(81.8)	(75.2)	(89.0)
Male						
Skilled	(2.7)	(4.2)	(4.1)	(7.8)	(14.0)	(5.5)
Unskilled	(92.0)	(92.1)	(92.3)	(89.0)	(82.4)	(90.5)
Person						
Skilled	(5.1)	(8.5)	(8.7)	(12.5)	(18.2)	(9.2)
Unskilled	(91.7)	(88.6)	(87.9)	(85.0)	(78.9)	(89.3)
Urban						
Female						
Skilled	(7.6)	(11.2)	(13.3)	(17.9)	(22.8)	(13.4)
Unskilled	(91.3)	(87.0)	(85.1)	(80.6)	(70.6)	(84.9)
Male						
Skilled	(4.7)	(7.6)	(5.4)	(9.3)	(15.1)	(9.6)
Unskilled	(92.6)	(89.4)	(92.6)	(88.7)	(82.7)	(88.1)
Person						
Skilled	(6.5)	(10.6)	(11.0)	(14.4)	(20.0)	(12.4)
Unskilled	(91.4)	(87.4)	(87.3)	(83.5)	(78.4)	(85.7)
Total	(24.4)	(18.3)	(18.0)	(17.6)	(21.4)	(100.0)

Note: The percentages shown above do not add up to 100 as the non-reported proportions have been excluded from the table.

Source: NSSO, 55th Round, 1999-2000.

Box 2

Skill: typist, stenographer-01, word processing-02, computer programming-03, data entry operator-04, fisherman-05, washerman-06, miner, quarryman-07, spinner including charkha operator-08, weaver-09, tailor, cutter-10, decorator-11, shoe-maker, cobbler-12, carpenter-13, mason, bricklayer-14, moulder-15, mechanic-16, machineman-17, craftsman-18, fitter-19, diemaker-20, welder-21, plumber-22, blacksmith-23, goldsmith/silversmith-24, electrician-25, repairer of electronic goods-26, motor vehicle driver, tractor driver-27, boatman-28, potter-29, nurse, midwife-30, basket maker, wicker product maker-31, toy maker-32, sports goods maker-33, brick maker, tile maker-34, bidi maker-35, agarbatti maker-36, bookbinder-37, artist/painter-38, barber-39, mud house builder and thatcher-40, others-41; no skill-99.

Source: NSSO, 55th Round, 1999-2000

skill'. Hence it would be fallacious to infer that the employed proportion of the skilled labour force denotes skill-enabled employment. So the 69 per cent of the unemployed workers does not indicate absence of skill as an exclusionary factor.

In a subsequent work, Mathur himself along with his co-author (2002a) finds mostly low and positive coefficients of correlation of both technical and general education facilities with all the three unemployment rates. The author observes that most of the correlation coefficients show wrong positive sign and when negative, low. (b) *Unemployment of all types of technically educated persons:* Table 4b denotes the formidably high rate of unemployment among the technically educated persons. It is quite evident that not only has it galloped relative to the general level of the unemployment among the youth as a whole, it is much higher than the unemployment rate of the secondary and above educated youths. Only one exception is the urban sector in 1983 in which case the unemployment rate of technically educated group is lower by 6 per cent. Otherwise there is substantial increase both in rural and urban areas.

VI

Occupational Mobility/Labour Mobility

In this section we use some proxy indicators such as occupational mobility/labour mobility by level of education to see the relationship between education and mobility. There is no such data by level of skill. The NSSO since its 50th round has been estimating the proportion of usually working persons of aged 15 and above, by level of education, who changed their work status or establishment during two years preceding the survey. This has been called occupational mobility in the 50th round and labour mobility in the 55th round. The relevance of using these proxy indicators is that skill and education are considered an enabling mechanism for occupational mobility, both horizontal and vertical. And even though unemployment may be policy induced it is often attributed to lack of skill and hence lack of mobility – spatial as well as occupational. This is an argument which has been forcefully rebutted by Robinson (1960) attributing unemployment to a demand constrained economy.

(a) *Change of work status and change of establishment:* Both the surveys suggest that the proportion of such workers who either changed their work status or establishment is minuscule. It is true across educational groups, rural-urban and male-female (Table 5).

It is notable that even this minuscule proportion of mobility does not show any definite relationship with the level of education. From the 50th round, it is observed that, change in work-status is relatively higher for secondary and above educated males of the urban areas, whereas change in establishment is higher for non-literate males in urban areas. But for females, change in work status as well as change in establishment is higher for the non-literates. In the 55th round, non-literates as well as secondary and above educated males change their work status in similar fashion, though the change of establishment is highest for the non-literates, closely followed by below secondary educated males. But among females, non-literates as well as below secondary educated change their work-status in similar manner, though the change in establishment is highest for non-literates and lowest for secondary and above educated females.

But in rural areas, the 50th round, change of work status is highest for below secondary educated males, whereas change in

establishments is highest for non-literates. But among females, change in work status is highest for secondary and higher educated but change in establishment is highest for non-literates. In 55th round, it has been observed that, change in work status is highest among secondary and above educated males of rural areas but change in establishment is highest for non-literate males of the rural areas. Among females also more or less the same feature is observed.

(b) *Patterns of occupational change:* The occupational change also indicates a zig-zag pattern. As a matter of fact there seems to be a shift of occupation in the reverse direction as far as professional and technical workers are concerned. Among urban

Table 3: Unemployment by Level of Education
(Per cent of labour force)

Education Level	Unemployment Rate		
	1987-88	1993-94	1999-00
Not literate	1.1	0.2	0.2
Literate up to primary	1.9	0.9	1.2
Middle	5.3	3.4	3.3
Secondary	8.7	6.2	5.5
Higher secondary	—	8.7	7.8
Secondary + higher secondary	—	7.1	—
Graduate and above	9.9	9.3	8.8
Educated (secondary and above)	9.0	7.7	7.1
All	2.7	1.9	2.2

Note: Unemployment rates on usual principal and subsidiary status basis.
Source: NSSO Surveys, 43rd Round (1987-88), 50th Round (1993-94) and 55th Round (1999-2000).

Table 4a: Unemployment by Level of Secondary Education and above

Year	Secondary Education and above		
	Rural	Urban	Combined
1983	20.4 (2.5)	30.0 (10.7)	20.7 (4.2)
1987-88	15.9 (3.8)	16.6 (12.1)	16.2 (5.4)
1993-94	17.0 (2.9)	20.8 (10.8)	18.5 (4.6)
1999-2000	12.5 (3.7)	18.3 (11.2)	14.8 (5.4)

Table 4b: Unemployment by Level of All Types of Technical Education

Year	All Types of Technical Education		
	Rural	Urban	Combined
1983	25.0	23.9	24.4
1987-88	24.0	20.7	22.1
1993-94	29.0	25.9	27.3
1999-2000	22.8	24.5	23.7

Notes: (i) The data are on usual status basis.
(ii) Technical education comprises of additional diplomas or certificates in agriculture, engineering/technology, medicine, crafts and other subjects.
(iii) Youth means age group 15-29.
(iv) Figures in the parentheses show the unemployment rate among youth as a whole.

Source: NSS, various rounds.

Table 5: Proportion of Usually Working Persons Aged 15 and Above, Who had Changed Their Work Status or Establishment during Two Years Preceding Survey (55th and 50th Rounds of NSSO)

Changed Work Status/Establishment	Male					Female				
	Not-Literate	Below Secondary	Secondary and above	All		Not-Literate	Below Secondary	Secondary and above	All	
Urban										
Work status	0.8 (0.42)	1.0 (0.37)	0.8 (0.53)	0.9 (0.43)		0.4 (0.55)	0.4 (0.42)	0.1 (0.1)	0.3 (0.45)	
Establishment	5.7 (3.6)	5.5 (3.2)	3.2 (1.2)	4.5 (3.0)		5.9 (4.1)	5.5 (3.0)	1.7 (3.3)	4.6 (2.2)	
Rural										
Changed work	0.4 (0.32)	1.0 (0.42)	0.8 (0.37)	0.6 (0.35)		0.2 (0.35)	0.4 (0.55)	0.3 (0.67)	0.2 (0.42)	
Establishment	6.5 (2.9)	6.0 (2.7)	3.4 (1.9)	5.8 (2.5)		8.4 (3.2)	7.8 (2.7)	4.4 (2.1)	8.1 (2.9)	

Note: Figures in the parenthesis are of 50th Round.

Source: NSSO-50th and 55th Rounds, 1993-94 and 1999-2000.

males at least 7.7 per cent of professional and technical workers have shifted to farming and fishing. Similarly, 20.8 per cent of urban female professional and technical workers have shifted to farming, fishing, etc. As regards rural males, 17.7 per cent of professional and technical workers have shifted to clerical work and 7 per cent to farming, fishing, etc. Among the rural females, highest percentage of change (77 per cent) is observed from professional and technical workers to clerical and related workers. This raises a poser regarding absorbing capacity of the economy which deter any vertical occupational shift. However, there is a point of caution. The different occupational grouping in the National Classification of Occupations are likely to have so much interlinkages that only an intensive empirical investigation can throw some light.

It is also significant to point out that mobility is otherwise a voluntary act. But in both the surveys of the NSSO, occupational change and mobility also mean loss of job due to closure, lay-off, etc.

VII Issue of Employability

On the basis of the foregoing data set we are in a firm position to conclude that the supply of skilled and educated labour force has failed to create its own demand. In such case it would be a misplaced argument that skill and education have at least enhanced employability. We say this not because we call in question the qualitative aspect of it. Our argument is that employability is always relative to employment availability. If a skilled and educated worker is not able to realise the price of his labour power his ability has only intrinsic value and not extrinsic value. His labour power, which is a commodity, peculiar though, has value but not exchange value till he is able to realise the price of it by putting his intensified labour power, i.e., skill to use. Hence in reality even employability is questionable.

Economic Endowment and Unenumerated Skills

The availability of a large stock of skilled agricultural labour in India is an example of rather demand creating its own supply. In assessing the stock of skilled workers one has to keep in mind the economic endowment of a country in terms of sectoral composition of the economy and sectoral share in the GDP, etc. On all these counts agricultural sector and the agricultural workers in India occupy an important position. Actually agriculture and allied activities still constitute 57 per cent of India's total employment. Till 1993-94 the share was rather 60 per cent. Between 1983 and 1993-94 its employment elasticity was as high as 0.70 which came down to 0.01 in 1999-2000 [Economic Survey 2002-2003].

But this segment of the labour force, viz., agricultural labour force remains unenumerated in the NSS (and ignored in almost all studies on workers' skill.). As per our information obtained from the NSSO in its skill coding the 'others' who have been assigned code 30 and code 41 in the 50th and 55th rounds respectively do not constitute the agricultural operation related skills. Note, the skilled workers like ploughman, sower, weeder, reaper and harvester are called 'field labour' in the data information system of the government of India for the purpose of information on agricultural wages. They are separated from 'other agricultural labour' (GoI, agricultural wages in India, various years).

Further note that these skills are not only marketable but they are actually marketed by a large segment of the workforce, however under-priced it may be.

Argument of Skill Shortage

Ignoring the skilled agricultural labour and the fact of unemployment of other categories in skilled and educated labour, India's employment planners have argued there is a shortage of skilled and educated labour. It is said that contrary to many east Asian countries and even the countries of sub-Saharan Africa, there is a shortage of vocationally trained and educated labour. It is merely 5.35 per cent (20-24 age group). The Special Group on Targeting Ten Million Employment Opportunity per year [Planning Commission 2002] has indicated the cross-country proportion of vocationally trained among the 20-24 age group labour force. It has compared India (with 5.35 per cent of vocationally trained youths of the above age group) with two sets of countries developing countries and developed countries. No doubt, in terms of percentage the Indian figure is minuscule, only 5.35 per cent against 22.42 per cent in Botswana, 28.06 per cent in Columbia, 36.08 per cent in Mauritius and 27.58 per cent in Mexico. The figures in the case of other countries are said to be so high that even the lowest one, Australia has a share of 64.11 per cent of such labour force and Korea with 99.86 per cent, is the highest.

But, is there really skill shortage in India even if we exclude the agriculture sector skilled labour? The answer to this requires that the term 'shortage' be rationally conceptualised. This is an issue on which there has been quite detailed discussions in development literature in the context of manpower planning notably Arrow and Capron (1968).

To sum up the varying nature of shortage:

- (a) Dynamic shortage such that there is steady upward shift in demand curve. The wage being offered is the same which is being paid to others of the same type and quality, vacancy remaining unfilled. But the elasticity of supply is low particularly for a short period.
- (b) Price rise type of shortage, in that the average price of the particular type of manpower is so high that there is a shortage of demand.
- (c) Production shortage so that the economy has not produced as much quantity of manpower as is the demand of that economy.
- (d) Finally, the second world war time servant shortage in the US where higher wages in the alternative lines of employment induced domestic helps to withdraw from their existing occupations, causing non-availability of domestic helps on the earlier wage rate.

None of the above types of shortage exists in the Indian situation. Instead it is low demand elasticity, as borne out by the unemployment situation of the skilled and educated labour force that keeps them as surplus.

Skill Explosion

I do not undermine the importance of educated and skilled workers. But merely enhancing their so-called employability without tackling demand side bottlenecks would mean surplus skilled labour in place of surplus unskilled labour. In the skill hierarchy model and job competition model there will be over crowding and 'bumping down' of low skilled workers and workers will continue to compete for jobs.

On the problem of over education and underutilisation of skills there are several studies in labour economics [Rumberger 2002].

empirical as well as theoretical. Some recent studies inform that between 1950 and 1995 in the US the growth in educational attainment outpaced the growth in the demand for skills. In the Finland labour market between 1975 and 1995 relatively more educated and skilled workers bumped the less educated and skilled into retirement or unemployment. In Britain as well, between 1986 and 1997, even though the incidence of over education did not increase one in three workers found that the job available to give them was much below the level of their education and skill. A recent research on software industries in India [Vijayabaskar, Rothboeck and Gayathri 2000] informs that against low skilled requirements in well paying big and medium size firms, engineering graduates are recruited causing 'entry barrier' for non-engineering skilled workers.

Even Schultz (1968) who has been in the forefront among the proponents of human capital investment did remark on over supply of certain categories of skilled persons in the US economy:

There undoubtedly have been over investments in some skills, for example, too many locomotive fireman and engineers, too many people trained to be farmers and too many agriculture economists!

Sen (1971) offers further insight by way of an illustration that if there is already a pool of 10 educated unemployed people and one more person is educated, the number of jobs remaining the same, one additional person will be added to the pool. So, now 11 persons will remain unemployed. He emphasises that market is not so adjustable that it would clear. Thus although education entails high cost the social gain as well as the individual gain would tend to be zero.

VIII

Technological Policy and Employment Possibility

It is significant to note that technology of the above nature is ordinarily marked by frequent replacement, thanks to micro-electronics and the varied forms of information technology. The short life cycle of technology will generate demand for different skills at different points of time so as to keep pace with the process of technological change resulting from technological innovations. So, either the fresh stock of workers or the same stock with altogether a different skill composition will be required. It is admitted at the same time that not all the firms will be at the same technological level for obvious reason that capitalisation capacity differs across the firms. The Flying Geese model holds good not only across country but across firms in the same country. But that does not ensure employment of all those constituting the skill hierarchy with unlimited supply. For the firms at the lower technological ends will have to catch up fast to adopt higher end technology first on its own and then because of the make do situation as unlike other product life cycle which depends on product differentiation and consumer choice, the life cycle of IT-enabled technology is centrally controlled by those who give it the life. So, those who create it destroy it as well.

The above situation is in sharp contrast to the technological discontinuity of the earlier days. Sen (1960) in his seminal work on technological choice and alternatives observes that because of technological discontinuity similar kinds of techniques were used by a wider variety of economies. He cites the example of steel industries in India using the same advanced techniques which were prevalent in Europe.

But in the present situation there is not only the possibility of technological continuity but also the compulsion of it. Here

too not unlike in the Sen's case, dissimilar economies will use similar technology. For, it is not only because of the technological discontinuity but because of the accumulation motive discontinuity on the part of capitalists that dissimilar economies will use identical technology. Kalecki (1990) points out how stimulus to use more capital per worker induces the backward and modern capitalist countries alike to use the modern techniques even though the rate of interests is much lower in backward countries.

Because of the technological continuity there will be skill continuity, both in fact will run parallel. Thus technology-enabled division of labour, and technological life cycle of today being terribly short, production function requires continuous composition and decomposition of skills. Only then it can ensure capital accumulation and valorisation of capital. The above referred ILO sponsored field study on software sector employment (2000) cites the concern of a HRD head such that what matters for the firm in a highly volatile demand structure is the ability to learn quickly in order to adjust to changing project environments. So same stock of workers are required to be skilled and reskilled on a continuous basis. This situation does not add to employment in any significant way. [27]

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UNDP meet to focus on technology in education

By M. Rajeev

HYDERABAD, AUG. 24. In the light of the rapid technological advances witnessed across the globe, the United Nations Development Programme is proposing a first-of-its kind round table conference for Asian countries on the use of Information, Communication and Technology (ICT) in education.

The conference is aimed at evolving ways to improve the education system that is "surrounded with a sea of mediocrity and low performance" in the Asian context and is being organised by the UNDP's Asia Pacific Development Information Programme. The meet, to be attended by a galaxy of policy makers, experts and educationists is envisaged to find solutions to pertinent issues like the pedagogic problems due to the mad rush of some Asian countries to bring in technologies into classrooms and whether the failure to provide broadband internet access to schools is a real handicap or is being used as an excuse for not delivering education accountability.

Outlining some key issues faced by Asian countries, the UNDP said that one of the

objectives of the round table is to provide a platform for countries to learn about educational resources available and affordable besides forging alliances to start building and sharing educational resources. The main aim is to explore possibilities of an ongoing mechanism such as a Strategic Education Research Partnership Asia, seeking to forge a new kind of partnership among researchers, practitioners and policy makers to generate collaborative work that will in turn help develop new capabilities among them.

According to the UNDP programme coordinator, Shahid Akhtar, in their rush to bring in technologies, Asian countries seemed to pay less attention to pedagogy, which resulted in the early signs of pedagogic difficulties. The Malaysian experiments in ICT in education stand as a textbook example wherein several projects faced pedagogic difficulties. In the ETEMS project for instance 2,000 schools were supplied with notebook computers, LCD projectors and courseware to teach mathematics and science in English to forms 1 and 4. However, while the urban schools complained that the material is not

challenging enough, the rural schools found the material to be too tough.

In this background, the round table is expected to serve many countries that are caught in situations similar to Malaysia. It will provide a welcome breather to stop, discuss and ponder on what works and what does not work. "Moreover, it can generate ideas on getting the biggest bang for every dollar spent on ICT in education projects," Mr Akhtar said in a letter addressed to Krishna M Inguva, a former Revenue Services official who is actively working in the education field, seeking his support in organising the event and playing the active role of "pro-bono" resource person.

Speaking to *The Hindu*, Mr Krishna said that the round table is aimed at studying the impact of ICT on education and ponder over issues as to whether it is really necessary to provide broadband internet access to students at an early stage. "Despite the technological advances, it is a known fact that the gadgets cannot replace a teacher," he said quoting the examples of the US and Sweden where computer education was limited to higher levels of education.

How safe

A FEW months ago, it was the issue of pesticide residues in bottled water. Now there are similar concerns over the bottled soft drinks, Coke and Pepsi. There have been reports, too, of high levels of cadmium, a toxic heavy metal, in the waste sludge produced at the Coca-Cola bottling plants in Kerala and West Bengal.

There is an important common thread running through all these incidents: groundwater. These incidents may be just the latest alarm signals about how badly India's groundwater is getting polluted. Bottled water and soft drinks are largely consumed by the more affluent. Groundwater, on the other hand, meets the needs of 60 per cent of India's households. So the quality of groundwater can potentially affect over 100 million households, rich and poor, urbanites and villagers alike.

Contrary to what is often believed, groundwater is easily polluted. There are so many possible pollutants, both industrial and agricultural. The polluters, likewise, can be countless, from individual farmers and households to small garage-scale entrepreneurs and large industrial operations. Once polluted, restoring the quality of groundwater is impossibly expensive even when technically feasible. Filtering and other ways of removing or at least reducing the levels of pollutants when pumping out water is also costly and viable only for industrial scale operations. Even monitoring groundwater quality poses huge problems.

Payal Sampat, in her paper titled "Deep Trouble: The Hidden Threat of Groundwater Pollution", published by the Washington, D.C.-based Worldwatch Institute, writes graphically about the seriousness of the issue: "We are now learning that the water buried beneath our feet is not only susceptible to pollution, it is in many ways more vulnerable than water above ground... Because it is underground and slow moving, groundwater stores pollutants far longer than, say, rivers or air do. Hence, the very characteristic that makes aquifers ideal reservoirs of freshwater — their ability to accumulate and retain liquid for longer periods of time — also enables them to become long-term sinks for contaminants. It's true that some aquifers recycle water back to the environment fairly quickly. But the average length of time groundwater remains in an aquifer is 1,400 years, as opposed to just 16 days for river water. Some aquifers contain water that fell as rain as much as 30 millennia ago. So instead of being flushed out to the sea, or becoming diluted with constant additions of freshwater, as rivers, lakes, and streams are, aquifers continue to accumulate pollutants, decade after decade — thus steadily diminishing the amount of clean water they can yield for human use."

Groundwater pollution has become such a problem principally

because of the nature and widespread use of modern chemicals. In addition, modern lifestyles demand the use of natural resources such as coal, petroleum and minerals on an unprecedented scale, with resultant costs in terms of pollution. From the start of the industrial revolution, smoke-belching factories have epitomised pollution and human degradation of the environment. So pollution control measures have been strongly enforced in the industrial sector. But it is necessary to recognise that agriculture too can be a major polluter of groundwater.

Globally, agriculture is the biggest consumer of water. In India, agriculture consumes about 90 per cent of the water (groundwater as well as surface water sources), compared to about three per cent for domestic use and less than five per cent by industry. The number of diesel and electric pumpsets has increased over 200 fold since 1950 and is currently estimated to number around 20 million. Groundwater is used for over half the irrigated area of the country. About half the water withdrawn for agriculture is returned soon afterwards, either seeping back into the ground or flowing to the rivers. These returning waters, however, can be laden with chemicals. With large areas under cultivation and these

leakage from sewerage systems, septic tanks and natural drains carrying municipal wastes, and application of fertilizers. Now wells with high nitrate levels were being found in the Faridabad area near Delhi, Dr. Keshari told *The Hindu*. Recently, the environment magazine, *Down to Earth*, reported that the CGWB had found high nitrate levels in the groundwater used in Bangalore and in many villages in Karnataka. In north Bangalore, the nitrate concentration was said to have doubled in a year.

The cadmium found in the sludge from the Coca-Cola bottling plants in Kerala and West Bengal too could have had its origins in the chemical fertilizer used. Phosphatic fertilizers are produced from phosphate rocks which vary in cadmium content from less than one to over 100mg/kg. Cadmium in phosphate fertilizer is of particular concern because its absorption by food plants provides the main exposure route for humans, according to Valerie Thomas of the Princeton University, U.S. But as the experience of the Rhine basin in Europe shows, cadmium can also be released into the air by the burning of coal and oil as well as other industrial activity, and then get deposited in the soil. Tight emission controls help reduce the cadmium load. Ever since the first

Groundwater is easily polluted and restoring its quality is impossibly expensive, writes N. Gopal Raj.

chemicals applied year after year, pollution can steadily build up in the underground aquifers.

Take for instance, the use of chemical fertilizers. By 1991, India's fertilizer use per hectare was 60 per cent higher than in the United States, according to an FAO-sponsored publication. Excessive application of nitrogenous fertilizer, as well as organic waste and sewage, has been implicated in the nitrate pollution of groundwater. High nitrate levels are possibly the most widespread contamination of groundwater globally and can lead to health problems such as the 'blue baby syndrome.' India uses over 11 million tonnes of nitrogenous fertilizer annually.

Even in the early 1990s, the agriculturally advanced States of Punjab and Haryana, where fertilizer is intensively used, had wells with nitrate levels well above the safe limits prescribed by the World Health Organisation (WHO). A few years ago, the Central Ground Water Board (CGWB) found that water from wells in over 300 sites scattered across Gujarat too had high nitrate levels. In 1997, Ashok Keshari of IIT Delhi found nitrate levels in the groundwater at many places in Varanasi and in Jaunpur town (close to Varanasi) that were several times higher than the WHO norm. In a published paper, he blamed the utilisation of sewage effluents for agriculture,

synthetic pesticides were introduced in the 1940s, these chemicals have become an integral part of modern intensive farming practices. In India, pesticide use has doubled in the past three decades. Many of these chemicals are toxic to humans, and America and Europe set limits on the maximum pesticide residues permissible in foods. When applied to plants and the soil, these often harmful chemicals can readily leach into groundwater. Worse, they can persist in the groundwater long after the chemical has been banned. DDT is still found in groundwater in the U.S., three decades after it was banned there. Even when more short-lived pesticides are used, the environment of the aquifer can slow their breakdown. Scientists have found that the herbicide alachlor, whose concentration halves in 20 days in the soil, can take up to four years to reach similar levels in groundwater. Moreover, the products created by the breakdown of some pesticides can be just as toxic.

In India, there have been reports of high levels of DDT in groundwater. The March issue of *Down to Earth* pointed out that several pesticides banned in many Western nations can still be sold in India. Pesticide residues in bottled water and soft drinks are likely to be yet another indication that the

Is our water?

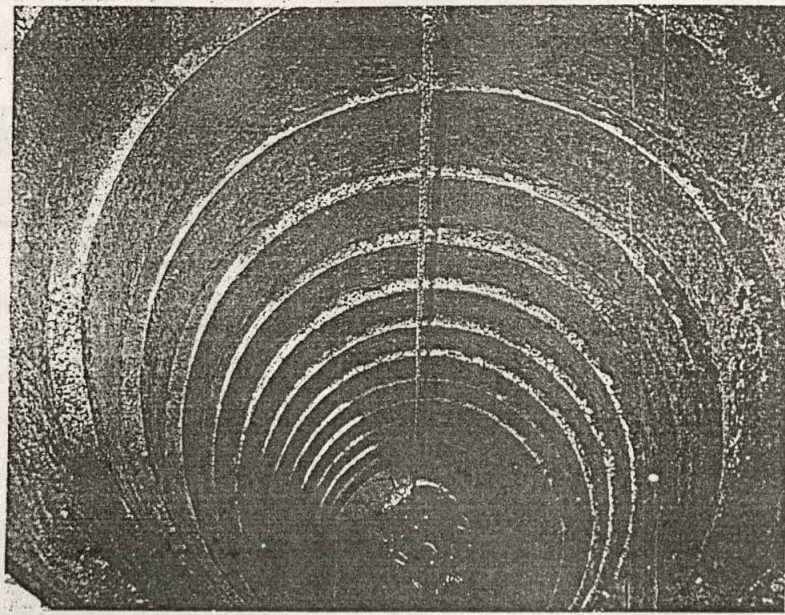
groundwater is contaminated. The Union Government has taken steps to regulate pesticide residues in bottled water and, in the wake of the latest controversy, has said in Parliament that it was considering making these standards applicable to soft drinks as well. Even though such regulatory measures are essential, they are nevertheless only treating the symptoms and not the root cause — the presence of pesticide residues in source water, observes the New Delhi-based Centre for Science and Environment (CSE), which has played a leading role in reporting the pesticide residues in these products. Pesticides are constantly seeping into groundwater as well as surface water due to the porosity of laws that govern the use of these toxic chemicals, it points out.

Sometimes, just excessive drawing of groundwater, which is already a major problem in many parts of India, can create and worsen pollution. One obvious example is of seawater incursion into depleted aquifers near the sea. These aquifers would normally drain into the sea. But when they are depleted, the flow reverses and seawater seeps into the aquifers. Just two per cent seawater entering an aquifer is sufficient to make the groundwater too salty to drink or use for irrigation.

Large-scale drawing of groundwater can create more serious hazards. The arsenic contamination of groundwater in West Bengal and neighbouring Bangladesh has affected millions and has been called the largest mass poisoning in history. Some research publications have suggested that the massive withdrawal of groundwater for irrigation could have played a part in releasing arsenic from the sediments which hold it. Now there are reports of arsenic-contaminated groundwater in parts of Bihar and Uttar Pradesh served by the Ganga, as well as in Chandigarh and parts of Haryana.

Moreover, such depletion of groundwater increases the flow within the aquifers, points out Dr. Keshari. This, in turn, can accelerate the breakdown of sediments, thereby releasing polluting chemicals, as well as spread the pollution faster through the aquifer and other linked water channels. Such mechanisms could have aggravated the fluoride contamination of groundwater that is now being reported from different parts of the country, from Rajasthan and Gujarat to the Gangetic plains and the Deccan Plateau. As with the arsenic contamination, fluoride contamination too occurs through a natural process in which fluoride bearing rocks crumble and break down. But the process can speeded up if the chemistry of the aquifer is disturbed. Industry, use of minerals, metals and fossil carbon fuels, as well as the primary producer of chemicals on a colossal scale, is a major source of pollution. Toxic chemicals in the industries' liquid effluents, solid wastes and even their atmospheric releases can ultimately find their way to the groundwater and rivers, causing untold damage. Some 4.4 million tonnes of hazardous wastes are being generated by 13,011 units spread over 373 districts of the country, according to the latest annual report of the Union Ministry of Environment and Forests. Just three States — Maharashtra, Gujarat and Tamil Nadu — account for over 63 per cent of the total hazardous wastes generated in the country.

The Hazardous Wastes (Management and Handling) Rules



The falling water table has only added to the problem.

of 1989 were intended to plug loopholes in the way industries handle their toxic waste. But these Rules have not yet been seriously implemented nationwide, points out Ramesh Ramaswamy, a Bangalore-based consultant industrial ecologist. Proper sanitary landfills, which can handle the toxic wastes produced by industries, have still to be set up. As a result, these dangerous wastes continue to be disposed of haphazardly. "There are only 2 or 3 such landfills in Gujarat and Maharashtra and even these are reported to be inadequate," he says. The system for collecting and handling municipal waste and

sewage, which too can contain toxic material, is also inadequate.

Households too can add to the pollution. The Ministry of Environment and Forests estimates that 22,900 million litres a day (mld) of domestic wastewater is generated from urban centres, almost twice as much as the 13,000 mld of industrial wastewater. The treatment capacity available for domestic wastewater is only for 6,000 mld and for industrial wastewater 8,000 mld, according to the Ministry. Nor, according to experts, is there a proper system in India for handling municipal solid wastes. An added problem in India is that the small and unorganised

sector industries dump their wastes into the sewage and municipal refuse system, making them more toxic and dangerous.

At a time when the sustainability of India's groundwater is already under strain from excessive withdrawal, pollution from industry, agriculture and households jeopardises what remains. Even the scattered reports of groundwater pollution from different parts of the country are alarming. If action to reduce pollution on all fronts is not initiated rapidly, the source of water for the majority of Indians will rapidly dwindle. A crisis is in the making.

Monitoring minimal

STATE GOVERNMENTS are responsible for ensuring safe drinking water in our taps but individual tapping of groundwater — a common practice even in urban areas — is far from safe as there is no system in place for regular monitoring.

Even though aquifers are located all over the country, the Central Pollution Control Board — entrusted with the task of monitoring water quality under the Water (Prevention and Control of Pollution) Act, 1974 — has barely 24 stations countrywide, with an additional 181 stations operated by the State Pollution Control Boards.

And while the Central Ground Water Board with a network of 15,163 locations also monitors the quality of groundwater, its parameters do not include bacteriological and pesticide contaminants, both of which are included in the Bureau of Indian Standards and the World Health Organisation standards for drinking water.

While there are standards for bottled water and drinking water, there are no standards for ground water. Since it is treated as a source, rather than a direct supply, which it is commonly used as, the BIS has not set any

standards for it.

"Controlling the quality of groundwater is beyond our scope. According to us, all groundwater must be treated to ensure that it meets the standards of drinking water," says S.S. Sethi, Director and head of Water Sources Department, BIS.

The 24 stations under the

The Government's regulatory system is inadequate, says Anjali Malhotra.

CPCB, classified as "problem areas" on the basis of major industrial activity, have been tested only twice since they were identified in 1995. "It is not possible to do such monitoring on a regular basis," says a CPCB official.

And some of the 181 stations, established sometime in 1999-2000, are not even fully operational yet, sources say. The Government agencies, as usual play the "blame-game." While the CPCB maintains that the Central Ground Water Authority, structurally the same as the CGWB, is the "custodian of ground water," the CGWA argues

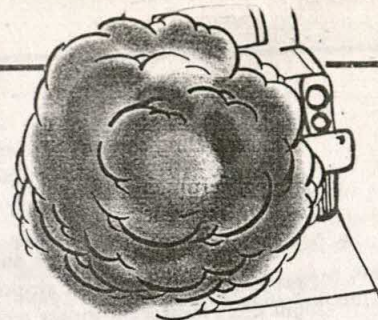
that pollution is the concern of the former. The CGWA — which draws on the large network of the CGWB — has over 15,163 locations that are monitored four times a year. In addition, there are 30,000 locations under the State Departments that are monitored every six months. "They have a larger network so there is a need for coordination. We should pool our resources. The technical know-how can be given by us while the monitoring can be carried out by them," says the former chairperson, CPCB, Dilip Biswas.

The Water Quality Assessment Authority, aimed at facilitating coordination was created two years ago but is yet to become effective. And while the monitoring situation continues to be bleak, the prevention mechanism appears to be failing as well.

"Industries are meant to dispose of the waste through effluent treatment plants but most do not. Poor system of transportation of sewage and creation of cesspools is another problem with urban areas. And finally, we have been advocating for bio-pesticides but the Ministry of Agriculture is not happy with that suggestion," says the CPCB Additional Director, R.C. Trivedi.

Smog

Now envelopes India's smaller cities



The recent release from the Central Pollution Control Board (CPCB), *Parivesh*, January 2003, presents deadly facts about air pollution levels in Indian cities. According to the report, Ahmedabad's air is the most noxious. Kanpur, Solapur and Lucknow follow closely, with small particulate levels (PM10) 3-4 times the standard of 60 microgramme per cubic metre ($\mu\text{g}/\text{m}^3$). The report has ranked 29 cities according to Respirable Particulate Matter (RSPM) levels recorded during the year

2000. It confirms once again that Indian cities are reeling under heavy particulate pollution with 14 cities hitting critical levels, exceeding 1.5 times the standard, 12 cities with high levels (1-1.5 times the annual standard) and merely 3 cities are at moderate levels, which is little below the standard (See graph: *Noxious*).

The ranking takes focus away from metros to smaller cities and reconfirms the worst fears that the latter are in the grip of severe air pollution and their air

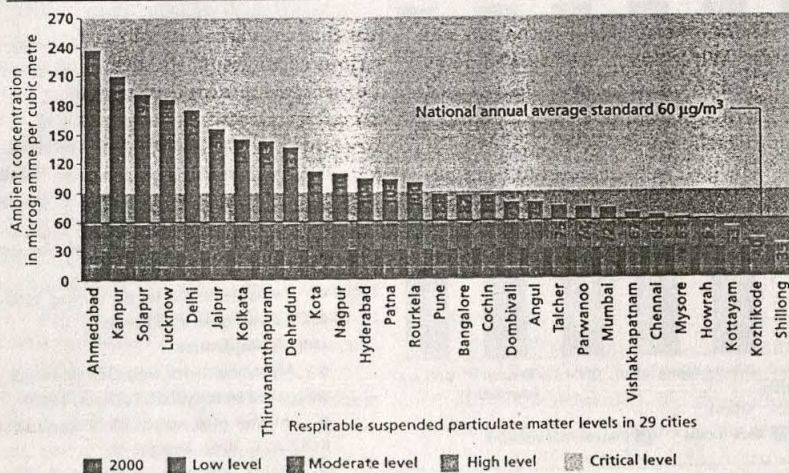
quality has further deteriorated over the last few years. In 1999 Kanpur was the most polluted city followed by Hyderabad, Delhi and Ahmedabad. In 2000 Ahmedabad became the most polluted. Solapur and Lucknow have displaced Delhi and Hyderabad. Delhi has improved its position to rank fifth and Kanpur has moved a step down (See box: *The ten worst cities*).

High levels of respirable and tiny particles with diameter less than 10 micron (PM10) are serious public health concern in almost all cities. These can trigger lung cancer, respiratory and heart problems. For the first time CPCB has also reported data for particulates with diameter less than 2.5 micron (PM2.5) near ITO traffic intersection in Delhi. Preliminary monitoring results reveal that the 24-hour average levels have exceeded the United States Environment Protection Agency limit of $65 \mu\text{g}/\text{m}^3$ on 95 per cent of monitoring days. This size fraction of particulates is not regulated and monitored in India. CPCB foresees the necessity of monitoring PM2.5 at more locations in Delhi and other urban centers of the country to assess its levels and for taking mitigative measures.

Other pollutants show a curious trend. Nitrogen dioxide levels in most major cities are generally close to the acceptable annual standard of $60 \mu\text{g}/\text{m}^3$. But sharp increases have been noticed in few cities with heavy vehicular traffic and density — as in few locations of Kolkata and Delhi — indicating stronger impact of traffic (See graph: *Not so noxious?*). Sulphur dioxide shows a sharp decline countrywide: in most cities ambient levels are well below the standard of $60 \mu\text{g}/\text{m}^3$. But a recent scientific disclosure regarding its contribution to the formation of more toxic sulphate particulates by Indian Institute of Technology, Kanpur in Kanpur city, exposes that despite high SO_2 emissions in the city, ambient levels of SO_2 are very low. This is because it converts fast to sulphates and adds to already high

Noxious

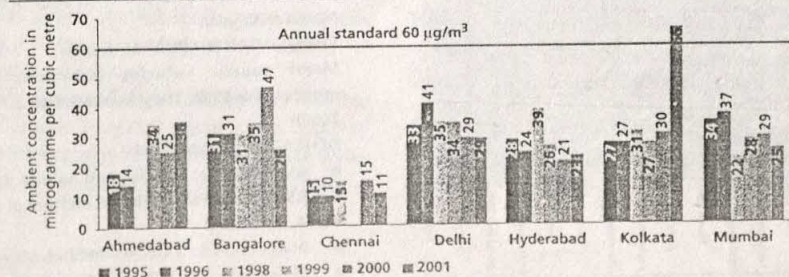
Annual RSPM profile for 29 cities for 2000



Source: Computed on the basis of National Ambient Air Quality Status-1999 (NAAQMS/2000-2001) and National Ambient Air Quality Status-2000 (NAAQMS/22/2001-02), Central Pollution Control Board, New Delhi

Not so noxious?

NOx in residential areas of cities with most automobiles



Source: Anon 2002, Report of the expert committee on Auto Fuel Policy, Government of India, August 2002

RSPM levels in the city. The sulphates that are known to several times more toxic have not been adequately assessed in our cities.

CPCB indicts vehicles as one of the predominant sources of air pollution. But a key message from the recent data is that Delhi — which has probably the largest fleet of vehicles at more than 3.5 million and adds 100,000 vehicles every year — has succeeded in improving its rank. This is the impact of hard measures implemented in the city over the last few years, such as introduction of Euro II standards, lowering of sulphur content in fuel to 500 ppm and implementing the Compressed Natural Gas programme. But in the absence of strong local action, a city like Ahmedabad with a much smaller vehicular fleet has surpassed Delhi in its

pollution levels. Levels in Delhi are still very high (See graph: *Rise, stabilise, rise*) and calls for much harder action in the future.

Rapid urbanisation in smaller cities, around state headquarters followed by enormous increase in number of vehicles is severely deteriorating their air quality. Distorted growth in these cities, dramatic increase in traffic load, especially in the most polluted segment such as two and three wheelers, and diesel vehicles combined with poor quality fuel have caused alarming increase in pollution (See graph: *The road rulers*). Ahmedabad has an unusually large number of two and three wheelers, and adulteration of fuel is a persistent curse. Almost the entire public transport is more than 15 year old. Absence of any local drive for action and delay in air

pollution control measures will only make the situation worse.

The Supreme Court's order of April 5, 2002 has directed the central government for an action plan for other critically polluted cities. But the response from the government is still piecemeal and a comprehensive air quality plan for the country is still wanting. ■

The ten worst cities

AHMEDABAD, Gujarat

- Vehicles and industries are major sources of pollution. The city had 13.05 lakh vehicles in 2002
- PM10, suspended particulate matter (SPM) and SO₂ are major concerns

KANPUR, Uttar Pradesh

- Major pollution sources: vehicles and industry; significant pollution: electric generators
- Major pollution concerns: Respirable suspended particulate matter (RSPM) and SPM

SOLAPUR, Maharashtra

- Major sources: vehicles and natural dust
- Major sources: vehicles (5.4 lakh vehicles in 2002; only 1.7 lakhs in 1990)
- High RSPM and SPM levels: major concerns
- Highest growth in tractors; 184 per cent growth in two-wheelers

DELHI

- 35.51 lakh vehicles registered by 2002; only 16.37 lakh vehicles in 1990. Highest growth in passenger cars followed by buses and two-wheelers during 1990-2002
- Matters of concern: CO, benzene, NO₂, RSPM, PM2.5 and SPM levels
- Arrested RSPM levels during 1998-2001, but still exceed desirable levels
- Major concern: vehicles (6.41 lakhs in 2002 compared to only 2.28 lakhs in 1990)
- Matter of concern: RSPM and SPM levels
- Major sources: vehicles and industries (10.37 vehicles in 2002 compared to only 5.48 in 1990)
- Major concern: RSPM, SPM and NO₂
- Highest increase of 280 per cent increase in case of autos and tempos during 1990 to 2002
- March 2003: Calcutta High Court ordered that all vehicles to meet Bharat Stage II norms by March next year

THIRUVANANTHAPURAM, Kerala
Major source: vehicles (1.1 lakh vehicles registered in 1992. They increased to 2.7 lakh by 2000)

DEHRADUN, Uttaranchal

Major source: vehicles and natural dust

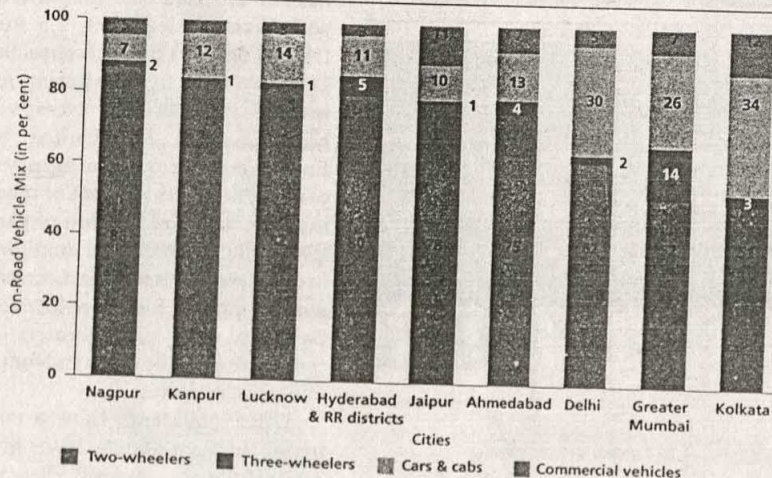
Major source: vehicles and natural dust

Major sources: vehicles and industries

Major concerns: NO_x, RSPM and SPM levels.

The road rulers

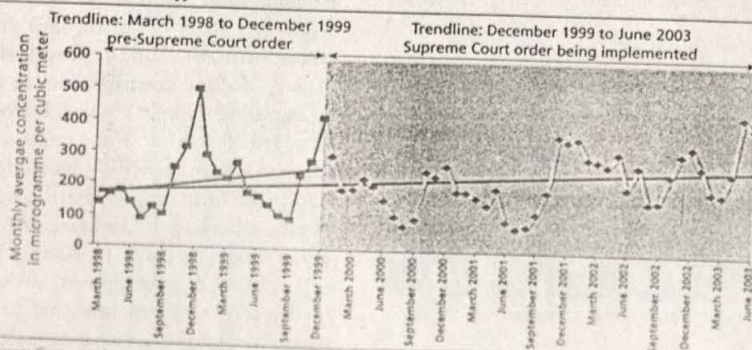
On-road vehicles in Indian cities



Source: Computed on basis of Report of the expert committee on Auto Fuel Policy, Government of India, August 2002

Rise, stabilise, rise

RSPM at ITO traffic intersection



Source: Computed on basis of air quality data of Delhi, ITO in the CPCB website <http://www.cpcb.nic.in/bulletin/ito/>

Sustainable Use of Water The Next Two Decades

Projections of water demand and supply based on various scenarios provide a backdrop for examining the relevance of alternative interventions to achieve sustainable use of India's water resources. Policy interventions in the water sector need to address the conservation and better use of water by correcting instruments that have resulted in inefficient use of water and pollution of water bodies. Adoption of such interventions must involve a wider dialogue within civil society and a study of the knowledge available from around the world.

KANCHAN CHOPRA

A great deal has been said on water resources in India. It seems almost banal to think that much can be added. I have added my bit over the last 30 years or more. A great deal has happened and changed on the national and international scene during this period. The major points I shall focus on can be put forth as follows:

- A large part of our water resources is used in agriculture albeit in an inefficient manner. Even so, we are now a nation with foodgrain stocks of a large magnitude. This does not mean, of course, that we have attained food security for every Indian, but that is mainly a distributional problem. In the new world order, we also have access to imports of agricultural products.
- We need to view water resources in their entirety, with the quantity and quality of water being the focus; sustainable use implies focusing on both quality and quantity. This may mean that issues of water management in overcrowded urban areas become significant in the next two decades.
- In planning for our water resources, we need to make use of the changing knowledge base now available to us, in particular with regard to the significance of aquatic ecosystems and their contribution to human well-being.
- We also need to learn from the contributions made by social scientists on issues of governance; in particular the role of decentralised governance structures in ensuring

efficiency and the significance of transparency in decision-making processes.

In this lecture, I propose to focus on projections of water demand for the next two decades and study them together with estimates of supply. This exercise is conducted for three scenarios: a business-as-usual, a high growth and a sustainable scenario. It provides a backdrop for examining the relevance of alternative interventions, institutional, financial and technical, for achieving sustainable use of India's water resources.

Demand-Driven Approach to Water Management

Drawing on an earlier paper, written as part of a project sponsored by the United Nations University,¹ water requirements for 2020 are estimated for agriculture, industry, households and the power sector (business as usual or BAU, high growth or HG and sustainable scenario or SS). Sectoral rates of growth of agriculture, industry, etc, in each are assumed to be as given by the macro-model set up as part of the project.² A 'water' scenario is set up to correspond to each macro scenario. The third scenario incorporates policy options that ensure sustainability.

Scenario I: Business as Usual

BAU for agriculture: BAU is approached at two levels of aggregation: national and regional. In the context of agriculture, the

two interpretations differ, primarily on account of the different interpretations of food security. The first BAU water scenario assumes that food security as a policy objective determines required production and corresponding water requirement. It extrapolates the country's demand for water on the basis of expected changes in population, consumption patterns and degree of openness of the economy, with a likely scenario charted out for each variable for the year 2020. We also check to see whether such an extrapolation is consistent with the sectoral growth rates for agriculture in the macro model scenario called BAU.³

For setting up the BAU scenario at the country level, we examine alternative estimates of population and demand for food. We make the following assumptions on the demand side:

- Population is extrapolated using the revised UN estimates, which give a figure of 1,272.2 million;
- Demand for food is estimated assuming that the urban population rises to comprise about 40 per cent of the total by 2020;
- A declining per capita cereal demand consequent on increasing incomes and urbanisation is extrapolated. Estimates vary with P Kumar (1998) and Bhalla et al (1999) providing the low and high estimates respectively.

We have assumed that a total cereal production of 253 million tonnes in 2020 presents a viable scenario with respect to demand plus reasonable levels of stocks to ensure food security with price stability. However, the declining per capita cereal demand is accompanied by an increased demand for vegetable and fruit and this implies demand for water as an input as well.

Further, demand for vegetable and fruit in 2020 is estimated to be 268.9 million tonnes [Dyson and Hanchate 2000]. Water requirements are worked out on the assumption that area under vegetable and fruit increases to 15 million hectares (ha) and all of this is a demand for irrigated area.

On the supply side for foodgrain, the following assumptions are made:

- Land degradation continues as in the late 1990s and results in a 7 per cent reduction in realised output compared with actual output.
- Rain-fed area under cereals remains constant at 75 million ha.

– With no technological or institutional intervention on rain-fed land, productivity on both irrigated and rain-fed land is extrapolated to grow at 1 per cent per annum, reaching 3.082 tonnes and 1.2884 tonnes per hectare respectively.

The macro scenario BAU which envisages that the foodgrain sector grows at 2.48 per cent p a and non-foodgrain at 7 to 8 per cent pa shall give a cereal production of greater than 253.09 million tonnes. This shall be adequate for ensuring food security at the macro level. The real challenge will be to arrive at an adjustment within the agricultural sector as between allocation of land and water from cereal to vegetable and fruit and from food to non-food sectors.

With this approach to demand, water supply needs to be extrapolated to get a view on deficits or imbalances that may emerge. Considerable agreement exists over the utilisable surface water resource in India being in the neighbourhood of 690 to 700 BCMs annually.⁴ However, the availability of water for irrigation is determined by investment in surface irrigation infrastructure. In this study, the water estimated to be available for surface irrigation in 2020 is determined by the irrigation works that are ongoing and expected to be completed by that time. This is of the order of 315.98 BCMs. The proportion of this that can be captured in any particular state is determined by the length of the canal and river network.⁵ Statewise availability of water is therefore determined on the basis of data on the length of rivers and canals in each state. Conceivable technological interventions such as inter-basin transfer of water have not been included as a possible means of regional water supply augmentation in this period.⁶

Available groundwater resources in a particular year are defined as “replenishable recharge after estimating recharge from rain, from streams and irrigated fields and addition from deep percolation”. Further, a convention exists of setting aside 15 per cent of this groundwater recharge for non-irrigation uses (PHD or public health department in the records) and treating 85 per cent as available for irrigation.⁷ We give estimates for total replenishable groundwater as well as that deemed to be available for irrigation using the above convention.

The question that can be asked is: can a certain percentage of replenishable groundwater be considered to be set apart

for agriculture? And, this percentage, in official practice has been increased from 70 per cent to 85 per cent, implying a reduction in the amount of groundwater earmarked for uses other than drinking water. These other uses are: (1) maintaining off-season base flow in rivers, (2) natural utilisation by forests, shrubs and other natural vegetation, and industrial and other uses. While a case may exist for considering a possible reallocation between different demands in the event of increasing demands from industry and a greater understanding of the needs of ecology, it needs to be done using a scientific approach.

With supply projected in the manner outlined above, overall water shortage or deficit in 2020 is limited to 2 per cent. More importantly, surface water is underutilised to the extent of 21 per cent due to in-built constraints of low water-use efficiency. This is accompanied by an over-extraction of groundwater of 25 per cent. Such an unbalanced growth shall itself be the source of considerable amount of unsustainability.

The second interpretation of the BAU scenario is motivated by the need to estimate regional shortages or surpluses. The BAUST, or the business-as-usual with state-level estimates, is made by assuming that surface and groundwater development follow the trend extrapolated from the past.⁸ The regional analysis reveals that over-extraction of groundwater shall emerge in eight states. In addition to Gujarat, Haryana, Punjab and parts of Uttar Pradesh, which are characterised as areas with overuse of groundwater, Andhra Pradesh, Maharashtra and Tamil Nadu are also expected to be subject to over-extraction. Surface water shortages may start emerging in some states such as Gujarat, Bihar, Maharashtra and Orissa.

It is important to reiterate that in the business-as-usual scenario, under our set of assumptions, overall shortage of surface water for irrigation is limited to 2 per cent; it is the underutilisation of surface water and the over-extraction of groundwater which results in the imbalance that is expected to be a source of unsustainability. *BAU for non-agricultural sector:* In three main components of non-agricultural requirements of water are considered, namely, the requirements of households, power plants and industries. Estimates of requirements and availability are presented for 1995 and 2020. A comparison is made between the total requirements

of these three sectors and the water available for these uses.

BAU water requirements for the household sector are derived from water requirement norms, and projections of population and rates of urbanisation expected to prevail in 2020. State-level estimates are also derived using a similar methodology. To obtain an estimate of the total population in 2020 we use the UN projections (1994 revision).⁹ According to these projections, the total population of India in 2020 will be 1,272.2 million. To work out a break-up of the total population into rural and urban segments, and a further break-up of the urban population according to city size (class I cities and non-class I cities and towns), we have made use of the projections made by the Asian Institute of Transport Development (AITD) in its paper prepared for the UNU project.

In our study, water requirements are projected not only at the aggregate level but also for various states. It is necessary for this purpose to make an estimate of rural and urban population in the states in 2020. This has been done with the help of the statewise population projections made by the RGI's office [RGI 1996].¹⁰

BAU water requirements for the power sector are based on projected power generation capacity (distinguished by the type of power plant – coal base, gas based, etc) and the water consumption norms for various types of power plants. Estimated statewise distribution of power capacity (in 2020) determines the water requirements of this sector at the state-level. The computation of water requirements for the power sector (utilities) is based on installed capacity for power generation in the country and water-use norms.

The data on power generation capacity for 1995 (by type of plant) are taken from a publication of the CMIE on the energy sector. To get an estimate of power generation capacity for 2020, we use the projections made by the AITD in their report (‘Energy Implications of Urbanisation’) prepared for the UNU project. Two sets of projections have been made by the AITD. The first one is based on low hydro, low liquid fuel and frozen efficiency scenario; the second one is based on high hydro, high liquid fuel and improved efficiency scenario. In the first projection, the growth rate in total power generation capacity is 8.6 per cent per annum between 1996-97 and 2020-21. In the second projection, the growth rate is 6.8 per cent per

annum. It seems to us that while the first projection is somewhat pessimistic in terms of the assumptions made about the likely increase in efficiency and hydropower development, the second projection is quite optimistic in this regard. Accordingly, we have taken an average of the two projections as the BAU scenario for the power sector. Thus, according to our estimates, the installed capacity for power generation in the country will grow from 89,166 MW in 1995-96 to 5,09,136 MW in 2020 (annual growth rate of 7.2 per cent).

BAU water requirements for industry are determined by extrapolated rates of industrial growth in the macro-model and water requirements of industries. We have made estimates of water requirement for the industrial sector at the all-India level and also for different states. Thus, these estimates are based on: (1) projected industrial growth at the aggregate level provided by the macro model, (2) trends in industrial composition and regional distribution in the 10-year preceding 1995, the base year of the estimates, and (3) the ratio of water consumption to output in various industries.

In making projections for water requirements for industry we have taken into account both the likely growth of the industrial sector in future and the manner in which the composition of industries and the statewide distribution of each industry may change over time. Computations have been made separately for the organised and unorganised manufacturing sector. The all-India estimates have been built up from the state-level estimates for the organised and unorganised sector.

State-level estimates of water requirements for households, industries and the power sector are consistent with the estimates made at the all-India level. However, as in the case of agriculture, a distinction between BAU and BAUST is relevant also for the non-agricultural sector. When a comparison is made between water availability and water requirements for the non-agriculture sector at the all-India level, we have to consider the BAU scenario for agriculture. But, when indicators of regional shortages are to be found, we use estimates obtained from the BAUST scenario for agriculture.

The total requirement for households, power and industry is 103.62 BCMs in the BAU scenario. Adding evaporation loss and ecological requirement we obtain

a total requirement of 223.62 BCMs for requirements other than agriculture.

Scenario II: High Growth

In this scenario taken from the macro-model, the aggregate and sectoral growth rates of the economy are projected to be higher than in the BAU scenario, as extrapolated by the macro model. It should be pointed out here that estimates of water requirements of various sectors have been made for the HG scenario only at the all-India level. Such estimates have not been made at the state level, except in the industrial sector.

The high growth scenario at the national level implies a rate of growth of agriculture of 4.98 per cent per annum with the foodgrain sector growing at 2 to 2.4 per cent and the non-foodgrain sector at 7.69 to 9.22 per cent. Irrigated land requirement increases to 122 million hectares. With present levels of water-use efficiency, water requirement increases to 804.2 BCMs. This implies a shortfall/water deficit of 22 per cent. The manner in which this translates into over-extraction of groundwater or other indices of unsustainability depends on policies pursued and cannot be ascertained. It is, however, clear that both the high growth and BAU scenarios are likely to result in unsustainable demand for water of one kind or another in the absence of specific investments and policies directed at improvement of water-use efficiency and other sustainability promoting measures.

The requirements of the household, power and industry sectors likewise add up to 120.57 BCMs in the HG scenario as against 103.62 BCMs in the BAU scenario.

Water Quality in BAU and HG Scenarios

As mentioned earlier, the question of sustainability is not only a matter of adequate water availability for meeting the requirements of different sectors in different states, but also one of maintaining water quality. Accordingly, this study also estimates the likely increases in water pollution in the BAU and HG scenarios (compared with the present level), and in the context of the 'sustainable scenario' we present estimates of costs and benefits of keeping water quality within acceptable levels.

Since urban wastewater and industrial effluents are the prime cause of water

pollution, in our analysis of water pollution and the likely scenario in future, we have confined our attention to these two sources. Estimates are based on CPCB studies, wastewater generation by 16 major polluting industries and in small-scale industries, and data for domestic water pollution load obtained from 108 class I cities.

It is estimated that biological oxygen demand (BOD) pollution load in 2020 will be more than twice that in 1995. A similar increase in chemical oxygen demand (COD) and suspended solids (SS) pollution loads is seen. At the aggregate level, the COD pollution load will increase from 12.3 million tonnes in 1995 to 29.3 million tonnes in 2020 in the BAU scenario and to 31.4 million tonnes in the HG scenario.

In addition to making estimates of aggregate pollution load in 2020, the analysis of impacts on water quality has been done at two levels: a state-level analysis of average pollution loads and an analysis of data from 108 cities to yield estimates of changes in point pollution. It is interesting to note that relative pollution loads shall increase most sharply for Maharashtra, Gujarat, Bihar and West Bengal.

Data on industrial concentration and water pollution loads in 108 cities is studied to yield interesting results. While only 11.2 per cent of the cities studied had pollution loads of more than 30,000 tonnes in 1995, it is estimated that 71 per cent shall have reached these levels by 2020, in case no policy intervention is undertaken.

Water Quality and Availability

Over time, changes in land use, in particular degradation of soil, loss of vegetation cover and over-extraction of groundwater are likely to affect water availability through their impact on hydrological parameters determining recharge. Loss of vegetative cover may play an important role in certain areas. Contamination of groundwater due to sewage, wastewater and garbage results in qualitative deterioration, which may disrupt the hydrological cycle and render groundwater unsafe for drinking or irrigation. Some estimates are on the basis of available data. It is estimated that a 6-7 per cent decrease in water supply could be expected on these counts. However, due to the scanty evidence available, we have not adjusted our estimates of water supply for this factor.

Important issues that our analysis brings out are:

- Unsustainable use of water in the context of agriculture is due to inefficiencies in the use of surface irrigation water and over-extraction of ground water;
- If present levels of urban wastewater and effluent treatment continue to prevail in the future, water quality will deteriorate significantly, affecting availability in certain areas. The reduction in water availability due to quality problems is expected to be substantial.¹¹

Both these conclusions point to the need for a reform of the water sector to correct inefficiencies in its use. A large part of these inefficiencies were the result of planning for increased supply without putting appropriate pricing and institutional structures in place. A demand management approach to water provides pointers towards the kinds of policy interventions that are needed in this context. We need to focus on

- Improving water use efficiency in surface irrigation;
- On preventing over-extraction of ground water;
- On ensuring maintenance of water quality in urban areas;
- On conserving water within watersheds and river basins in the best traditions of hydrological engineering with stakeholder participation.

Interventions in Water Sector and their Implications

Policy interventions in the water sector need to be built up around projected water requirements as outlined above, with the objective of providing water for development of the agricultural, industrial and energy sectors and to meet the drinking water needs of the large population. Interventions need to plan for conservation and better use of water by correcting institutions and instruments that have resulted in the inefficient use of irrigation water and indiscriminate pollution of water bodies. As water resources become scarce, we are faced with two options. We can continue with the in built efficiencies in the system, provide more water through technologically sophisticated but highly costly ways. Or we could examine options for better use and conservation of water and adopt a judicious mix. The following kinds of interventions are identified as relevant:

- Enable improved efficiency of surface water use in irrigation: this is the single

most significant policy intervention needed, in particular since agriculture shall continue to account for the greater proportion of water use in India.¹² Such an intervention shall have technological, institutional and pricing components. Introduction of drip irrigation where feasible, adoption of technology for abatement of salinity and waterlogging are the technological measures needed. These can be augmented with appropriate power pricing and initiation of water user associations in canal commands as pricing and institutional measures leading in the same direction.

- Increasing production in rainfed areas through conventional watershed management and watershed management with institutional change. This is undoubtedly a slow process. However, adoption of the 1994 Guidelines for Watershed Development gave the process some headway. Rao (2000), in an evaluation, comments, "The overall impact of the programme has been positive and significant when compared to the period before the implementation of the guidelines". Further, the National Water Policy of 2002 adopts the conservation of water within catchments as one of its guiding principles.

- Effluent treatment by industry, either individually or collectively. In the absence of such treatment, conflicts between agriculture, industry and domestic users of water are imminent. One such conflict has been documented for the Bhawani river in Tamil Nadu, when deteriorating water quality due to discharges by industry upstream became the focal point of conflict.¹³
- Use of pricing and other instruments for proper water allocation.
- Creating the appropriate legal and social environment for collective action by stakeholders.

Table summarises the findings on water requirements and water availability under all three scenarios, BAU, HG and SS (the sustainable scenario). Extrapolations of demand from different sectors show that if business as usual continues, quantitative shortages of water are likely to emerge. Declining water-use efficiency in agriculture, increasing urbanisation and unregulated industrialisation pose significant challenges for the water sector in the future. Further, shortages, either of ground or surface water or both, are likely to be pronounced in the states of Andhra Pradesh, Gujarat, Haryana, Punjab, Tamil Nadu and Maharashtra.

The sustainable scenario identifies interventions on the demand management and

supply augmentation sides, which can ensure that total water requirement is 964.09 BCMs in 2020. Of this, 79 per cent of the demand shall come from the agricultural sector. In percentage terms, this is a decrease from current levels since requirements for non-agricultural sectors rise with industrialisation and urbanisation. Only 4.66 per cent of total requirement comes from the household sector and another 3.37 per cent from industry and power sector. It is interesting to note that this study provides additionally for a requirement of 78 BCM to maintain base non-seasonal flow in rivers and 42 BCMs for evaporation losses. With total supply from ground and surface water at 1,110.566 BCMs, one can argue that the position at the aggregate level shall be manageable. Such a presumption assumes, however, that interventions suggested to achieve improved water-use efficiency shall be undertaken and shall be successful. In a frozen water-use efficiency in the agriculture scenario, acute shortages may arise even at the aggregate level.

Supply Augmenting Solutions: Old and New

The 'sustainable scenario' outlined above, though driven by a demand management approach, has a degree of supply augmentation built into it. This shall take place

- through completion of planned infrastructure for large and medium projects up to 2020, and
- through additional run-off capture by watershed development projects.

It does not allow for the proposal for interlinking India's rivers, which is the latest in the range of water sector interventions being discussed. This is a major supply augmentation proposal, reportedly planned to be undertaken and completed in the next 10 years. As is widely known, the proposal in one form or the other has been discussed several times as a possible solution to

Table: Water Requirements of Various Scenarios (in BCMs in 2020)

	BAU	HG	SS (Per Cent)
Households	67.52	67.52	45.01 (4.66)
Power	8.19	12.29	5.00 (0.5)
Industry	27.91	41.58	27.72 (2.87)
Agriculture	677.30	804.20	768.37 (79.69)
Evaporation	42.00	42.00	42.00 (4.33)
Ecological	78.00	78.00	78.00 (8.09)
Total	920.92	1005.59	964.09

India's water problems.¹⁴ As recently as 1999, the National Commission for Integrated Water Resources Development Plan (NCIWRDP) evaluated and reviewed these proposals¹⁵ and I shall examine closely their summing up of the issue in an effort to look at the plausibility of this option.

The NCIWRDP opines that water balance studies for individual river basins must form the basis of any such proposals. It divides the proposals into two components: the Himalayan component and the peninsular component. It states that "the Commission has reviewed and done work only on peninsular component for inter-basin transfer proposals. The Himalayan component data, being classified, were not available for analysis." Further, "On the basis of published information, the commission is of the view that the Himalayan component would require more detailed study using system analysis techniques".¹⁶

Water balance studies were conducted by the commission for six east flowing peninsular rivers. I reproduce their recommendations:

"...Thus, there seems no imperative necessity for massive water transfers. The assessed needs of the basins could be met

from full development and efficient utilisation of intra-basin resources except for the Cauvery and Vaigai basins, with shortages of 5 and 8 per cent respectively". Further, "Although the present studies indicate the need for only limited transfer from Godavari towards the south, the commission would like to stress the limitation of these studies. The possibility of the mean flows being overestimated has been brought out earlier... There are uncertainties about the ground water estimation also. In view of these limitations and uncertainties, the commission is of the view that further studies as to the future possibilities of inter-basin transfer in the east flowing rivers need to be continued."

The note of caution sounded needs to be examined in the context of our finding, earlier in this paper, that Andhra Pradesh is likely to emerge as one of the water deficit states, in view of the projected over-extraction of groundwater in the BAU scenario and even more in the HG scenario.

The commission examines the west flowing peninsular rivers and the recommendations are conditional everywhere with the exception of small transfers for domestic and industrial use within Maharashtra. Some mention is made of possible transfer

from Karnataka to Tamil Nadu, but qualified by reference to inter-state problems. On some transfers between basins within Karnataka, the high cost due to lift requirements is commented on and stated to be viable only if the water is utilised for high value agriculture, such as horticulture and floriculture.

The commission also comments on likely methodological problems in assessing economic viability of such a large project, in view of the fact that inter-basin transfer projects involve environmental and social benefits and costs, not all of which are quantifiable or even properly understood. To conclude, all aspects of the review point towards a careful assessment and further examination of issues before accepting this alternative as a viable and acceptable intervention.

The above-mentioned recommendations and reservations need to be viewed also in the light of the experience with respect to implementation of large projects. Time and cost overruns have resulted in losses, delays and inefficiency. The NCIWRDP estimates that the completion of 'spillover projects' shall require Rs 70,000 crore in the 10th Plan and Rs 1,10,000 crore in the 11th Plan.¹⁷ Lessons worldwide from governance of

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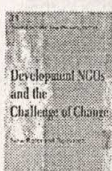
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development projects likewise indicate that decentralisation and transparency are important components of sustained development.¹⁸ Whatever the set of policy interventions that we finally decide to opt for, the process leading to their adoption must involve a wider dialogue within civil society.

Concluding Observations

Meanwhile, we are not alone in our concern for the 'water future of our country'. The issue now sits at or near the top of the world-wide political agenda. The last part of the 20th century has been an era of large world conferences, not least on water. Starting with the Dublin Conference in 1992, the UN Conference on the Environment and Development (1992), the Second World Water Forum in the Hague in 2000, the International Conference on Freshwater in Bonn (2001) and the Third World Water Forum in Kyoto. With 2003 declared as the 'year of freshwater' and the release of the World Water Assessment Report, humankind is focusing on the vital importance of water to our future. Let us look at this collection of knowledge and experience and in the true spirit of globalisation, learn what is relevant to us from it.

The World Water Assessment Programme, which recently released the executive summary of the World Water Development Report, outlines challenges and sets up policy directions for stewardship and governance with respect to water. While I do not wish to go into the details of that report at this juncture, it bears pointing out that "protecting ecosystems for people and the planet" is high on the list of priorities. Aquatic ecosystems contribute to human well-being in myriads ways and disrupting them involves a heavy toll in terms of life, livelihood and well-being. It is in fact expected that restoration of freshwater ecosystems will be an important part of environmental management in the future. Development that does not alter the integrity of river flows is becoming the keyword. In the selection of policy interventions for appropriate water stewardship and governance in our context, let us look around and use the state of knowledge (and an assessment of the limits to that knowledge) available from around the world. [37]

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Notes

[Fourteenth Dr Kanwar Sain Memorial Lecture delivered on March 21, 2003, at Teen Murti Auditorium, New Delhi.]

- 1 See Chopra and Goldar (2000) undertaken as part of a larger project for the United Nations University, Tokyo.
- 2 The macro model being referred to is the one developed as part of the UNU project; see Pandit (2000). We use the June 2000 estimates provided.
- 3 Macro-model estimates of Pandit (2000) as a part of the UNU project.
- 4 Estimates of total and utilisable water are taken from publications of the Central Water Commission, Govt. See Table 1.1 in Chopra and Goldar (2000).
- 5 The length of rivers and canals obtained from Sharma and Paul (1998).
- 6 This option shall be examined later as a means of water supply augmentation.
- 7 Such a convention may not be in line with the increasing requirements of industry and households.
- 8 Following such a methodology implies that estimates at the national and regional levels should not be compared. The BAUST estimate is motivated by the need to identify regional shortages or surpluses of water, while the BAU estimates determine the impact of food security objectives on water demand.
- 9 Certain other projections of population are also available, including the projections made by the Registrar General of India [RGI 1996].
- 10 For details see Chopra and Goldar (2000).
- 11 This question has been studied by Das and Dipankar (2000). Using a more stringent standard for irrigation water, the study estimates that in some areas with a high level of urbanisation, only 54 percent of the groundwater in underlying aquifers shall be fit for use for irrigation. This study was commissioned by IEG as part of the current UNU study.
- 12 For an analysis of water-use efficiency vis-à-vis water productivity growth in Indian agriculture, see Rao 'Presidential address at the Indian Society for Ecological Economics (2001)', forthcoming in Chopra, Rao and Sengupta edited volume.
- 13 See IGIDR (1998) and the reference to the MIDS study in the Bhawani basin given therein.
- 14 Note the proposals on the national water grid and these so-called garland canals in the 1970s of the last century. At that time, the proposals were abandoned.
- 15 See report of the NCIWRDP (1999), Volume 1, Chapter 7.
- 16 On northern India, it does, however, comment on transfer of water to the Thar desert area. "For the Thar desert area, it would be perhaps desirable to promote arid zone low density tree cover...The need for further expansion of irrigation facilities in this area will have to be examined from all angles, including ecological and environmental considerations."
- 17 Iyer (forthcoming) in focusing on the dilemmas of water resource development, talks first of the money dilemma. "The NCIWRDP estimates that the completion of 'spillover projects' shall require Rs 70,000 crore in the tenth plan and Rs 1,10,000 crores in the 11th Plan."
- 18 "Sustained development requires institutions of

good governance that embody transparent and participatory processes and that encompass partnerships and other arrangements among the government, the private sector, non-governmental organisations and other elements of civil society", see World Development Report (1999-2000).

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Water, water, everywhere

WATER
PERSPECTIVES,
ISSUES,
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**Inadequate availability
of water is the biggest
crisis that faces India**

WATER PERSPECTIVES, ISSUES,
CONCERNS

By Ramaswamy R. Iyer
Pub: Sage Publications
Pages: 368
Price: not mentioned

Superficially, water seems overabundant on our planet. Three-quarters of its area is covered by water. Around 98 per cent of this is in the oceans, and only 2.7 per cent is fresh water. 75 per cent of this lies frozen in the polar regions; 22.6 per cent is present as groundwater, some of which lies too deep.

Only a small fraction is found in rivers, lakes, the atmosphere, soil, vegetation and exploitable underground aquifers, and this is what constitutes the fresh water resources of the world. Water in all its forms constitutes a unity and there is a finite quantity of water on earth and this is neither added to nor destroyed. The finite quantity has to be juxtaposed against increasing demands from a growing population.

Thus, this book by Ramaswamy R. Iyer is on a crucial topic. Although the book has been culled out of papers and articles written by him over the last 10 years, much work has been done, according to the author. Iyer, an ex-bureaucrat, retired as secretary, Ministry of Water Resources, and is presently honorary research professor at the Centre for Policy Research, New Delhi.

Inadequate availability of water is the biggest crisis facing India in terms of spread and severity. India's food security is under threat. Urban India is screaming for water. In rural India,

groundwater levels have plunged substantially in 206 out of 593 districts. India's population is growing by 20 million every year and

is expected to reach 1,700 million by the year 2050.

Although the idea of a national water policy originated in 1980, it took shape and emerged towards the end of 1987. This document was revised by the National Water Resources Council in April 2002. According to Iyer, this exercise was perfunctory and what we now have as policy is thoroughly inadequate.

Considering the importance of groundwater, we need to have a strong Central Groundwater Authority coupled with groundwater legislation at the state-level. Attempts have been made in this direction, but we are, largely, still in the realm of intentions. The central problem in groundwater management is the present legal position that vests the ownership of water in the owner of the land above.

On the other hand, are big dams avoidable? Iyer outlines some apparently clinching arguments in favour of large projects. He, however, concludes that the question is not whether large dams should be allowed or ruled out, but whether they should be the first choice or the last option. He reminds that large dams are only one aspect or feature of the modern world.

With regard to the Sardar Sarovar project, Iyer has expressed his views not about the merits of the project or about the question of large dams in general, but about the nature and implications of the Supreme Court's (majority) judgement. According to him, the judgement delivered after six long years of proceedings, failed to deal with the very issue that was brought before it, namely, a situation of lapse and failure in relation to certain aspects.

Iyer has narrated interesting information about conflict-resolution among India, Pakistan, Nepal and Bangladesh in regard to sharing of water of rivers. In respect of Indus water treaty of 1960 with Pakistan, he says that the treaty has acquired a reputation, internationally, as a successful instance of conflict-resolution, and is often hailed as such in the literature on the subject. He further adds that it has been widely noted that the treaty has been working reasonably well despite the difficult political relationship between the two countries. Iyer underscores the scope for regional cooperation for harnessing the water resources, particularly with Nepal and Bangladesh.

Regarding the projected water crisis, there are two views. One is that with a finite supply and a fast-growing demand, a crisis is inevitable and not very far away. The other is that with proper demand management, economy in water-use and extensive local water-harvesting and watershed development, a crisis can be averted.

The National Water Policy 1987 had assigned the highest priority to drinking water. But it has remained a mere declaration on paper. There are large numbers of 'no-source' villages. The curious fact is that targets for covering such villages are repeatedly achieved, but their numbers grow larger rather than smaller. A significant aspect of the scarcity of water in rural areas is that the burden of fetching water from distant sources falls on women (including girl children), and yet women who are the providers and managers of water in the household have little voice in water resource planning.

The idea of 'linking of rivers', dormant for a long time, has acquired new prominence now. Iyer has examined the grand vision and has come to the conclusion that it is more of a mirage and any headlong rush in the pursuit of this chimera will be disastrous. Instead, he has proposed seven steps for comprehensive 'water resources management'.

Iyer deserves to be complimented on producing a book which is lucid, readable, interesting as well as thought-provoking.

♦ JAYANT KHER

MEDICARE

A healthy change

THE empty promises of different governments since Independence have left several pockets in modern India grossly underdeveloped. Take the case of Sittlingi in Dharmapuri district, Tamil Nadu. This verdant valley at the meeting point of the Eastern and Western Ghats is bereft of any civic or infrastructure development.

The nearest towns to Sittlingi are Dharmapuri at a distance of 100 km and Salem another 120 km away. The nearest taluk hospital is 50 km away in Harur, which has no surgical facility. There are no pucca roads, power or telephone cables. Till the early 1990s, proper medicare was unheard of. Fifteen out of every 100 children died before they reached the age of one; 75 per cent of babies born were low Birth Weight (LBW) babies and the Infant Mortality Rate (IMR) was as high as 154/1,000.

But it did not take a "gora sahib's missionary zeal" to change the lives and health profile of the tribals here. Instead a young husband-wife team, who shared a common dream of "educating and medically equipping the unreached", has in the last decade transformed Sittlingi and its people.

Dr. Regi George and the petite gynaecologist Dr. Lalitha George, fondly called Gi and Tha, consciously gave up comfort, higher academic and professional opportunities to chase their own dream — to convince people that "only very basic things and not high tech medicare helps to lead a healthy life".

Vivacious Regi drew inspiration from the example of Dr. Albert who spent 50 years in Gabon, Africa, running a hospital solely for the poor. The reticent Tha, who as a child was stirred by Swami Vivekananda's teachings and believes that the greatest act is doing good for others, echoes softly, "We are trying to build a model that endorses medicine as a social subject that depends on people's felt needs and which can be practised with trained local people who are intelligent but illiterate due to a lack of opportunity."

Had it not been for the vision of these two young medical graduates from Allepy Medical College in Kerala; had it not been for the unflinching passion of Regi and his friend, S. Ravichandran from Gandhinagar, Madurai, who trekked through countless villages in Tamil Nadu, Maharashtra, Rajasthan and Gujarat to find an appropriate working place; had it not been for an old tribal in Sittlingi willing to give away an acre of wasteland land

when he learnt that the buyers wanted to set up a hospital for the welfare of his community; had it not been for the initial corpus fund of Rs.10,000 donated by Action Aid, Bangalore, had it not been for the guts of a few individuals like Rajamma, Dhanalakshmi and Madheswari who dared to become "barefoot doctors" Sittlingi would not be what it is today.

Paralysed by poverty and ignorance, development seemed almost impossible till Gi and Tha registered their dream project as the "Tribal Health Initiative (THI)" and started off from a mud-thatched

hut in the summer of 1993. The duo ran the Out Patients' Department (OPD) in the mornings. With a floor mat and lantern as accessories, the room was transformed into a labour room when emergency came calling.

Traditionally, in tribal communities, women were forced to give birth out of doors — mostly in the dirty backyards of their huts — where they were obliged to stay for a week, as they were considered unclean. As a result, newborns died of cold and infection. It was hard work to convince tribal women to come to the hospital.

However, the unassuming and low profile couple did not lose hope. Confident of ushering in change, they visited homes, counselled, selected and trained a band of village girls as nurses and slightly older women as health auxiliaries.

If the shocking statistics from the National Commission for the Scheduled Castes and Scheduled Tribes in Delhi brought Gi and Tha to Sittlingi, the statistics of the last decade now egg them on. The proportion of pregnant women coming for check ups has increased from 11 to 85 per cent. Newborn deaths are down by 50 per cent.

The proportion of under weight babies under five years has dropped by 20 per cent. Death and illness of mothers in childbirth has also reduced drastically.

From a mud-thatched OPD-cum-labour room, the THI now boasts of a 10-bed hospital with a separate operation theatre, labour room, neo-natal room, emergency room and a laboratory. The OPD attendance stands at an impressive 12,000 a year while surgeries, deliveries and in-patient admissions have multiplied over the years.

Gi and Tha give all the credit to their core group of 25 staffers and an equal number of health auxiliaries. "It is due to their persistent counselling and persuasion that there is an increasing willingness among local tribals to bring patients for treatment in the early stages of illness. They have mapped every village, filed every family's profile, and recorded every individual's health status. Mothers are being made aware of feeding and basic health and hygiene advice imparted has also improved the survival prospects for pre-term and low birth weight babies and also anaemic and malnourished mothers," says Gi with pride.

Tha adds, "These girls are the real barefoot doctors. They document and maintain health records of the villages, teach villagers about three major problems (nutrition, respiratory infection and diarrhoea) and also run a pharmacy out of a steel trunk for ordinary ailments. In case of emergencies they are the ones who ensure that the patient is rushed to the hospital."

In the journey so far, organisations like Child Relief and You, Action Aid, JRD Tata Trust, the Tamil Nadu Voluntary Health Association have helped them take small steps forward with financial help. However, their efforts to get another trained doctor to share the work load has failed so far.

Tha and Gi have come a long way since the days when local quack tried to drive them out by spreading rumours about them. "Our aim is impart and integrate basic healthcare knowledge into tribal wisdom so that they can prevent common diseases and easily curable infections and lead a healthy life," they say.

Things don't happen overnight. With a rare sense of devotion, Gi and Tha are silently arming the unreached sections of people with basic medical knowledge. ■

For more details, contact Tribal Health Initiative, Sittlingi, Theenathanalalai P.O., Dharmapuri district, Tamil Nadu 636906 or e-mail sittlingi@tribalhealth.org



Care, coupled with wisdom, is enough.

In the absence of civic or infrastructure development, people in Sittlingi, Tamil Nadu, fell prey to numerous preventable diseases. But the vision of one doctor couple changed everything. SOMA BASU recounts Sittlingi's journey to good health.



DIET DURING THE MONSOON



Dos & Donts

Dr. Nitin Chhoda
Mr. Firdosh Anklesaria

In a city like Mumbai, the monsoon is something that many of us look forward to. While many of us may grudge and complain about the weather, the traffic and transport delays, it's generally acknowledged that the rains provide a pleasant change of atmosphere. The fresh smell of the flowers and greenery in public parks and gardens (and the incessant traffic jams) are often a sign that the monsoons have arrived.

While most do not like the hazards associated with the monsoons, all of us look forward to a hot, steaming plate of our favorite food, when we reach home after a long and wet day at work. But there's more to it than meets the eye. Believe it or not, your food can actually pose a serious health hazard for you and your family this monsoon. The fact is, wet conditions and humid atmosphere are conducive to the growth of many bacteria and viruses. The million-dollar question is – What can you do to keep diseases (and the doctor) at

bay?? (Note that children, elderly people, and those who are prone to repeated attacks of cold and flu should be especially careful of what they eat this monsoon).

Food borne water illnesses include dysentery, cholera, typhoid fever, and hepatitis; all these diseases can be both reduced and controlled with the following precautions.

So follow this list of dos and don'ts, and have a safe and healthy monsoon in the year 2003.



The Do's

➤ Cook and Eat - Any food that is cooked immediately before serving is generally safe. All meats must be cooked at high temperatures.

➤ Food allergies are very common, and extra care must be taken to prevent allergic reactions in the monsoon season. Some individuals have allergic reactions to foods such as onions, fish, prawns, oysters, lobsters, eggs, cow's milk, dairy products like chocolate, paneer, etc., peanuts, soybeans, dry fruits and citrus fruits like oranges, grapefruits, etc. Stay away from any foods that cause you allergic reactions this monsoon.

➤ Folklore has it that food borne diseases are caused by imbalances between 'hot' and 'cold' foods during the monsoon season. Hence excessive consumption of 'cold' foods such as green leafy vegetables is not advisable during the rainy season, as compared to 'hot' foods such as spices, mustards, and chilies. It is quite likely that these are religious beliefs that have been passed on through the ages, and as long as an individual can tolerate 'hot' or 'cold' foods without any gastric discomfort, there are few reasons why he/she should avoid those foods during the monsoons.

➤ Disinfect kitchen surfaces and cutting boards every week, with kitchen cleaning liquids.

➤ Everyone is aware that boiling water destroys harmful bacteria and viruses. However, what is not known is the actual length of time for which the water is to be boiled. Most people put off the stove as soon as water starts boiling. This is absolutely wrong. To make water 100 percent safe, it should be boiled for a further 15-20 minutes after it begins to boil. This is an effective measure against most water borne micro-organisms.

➤ Drink only boiled, filtered, or mineral water.

➤ Make sure to purchase your mineral water from a reputed store (company seal intact) and never from a roadside stall.

➤ Wash the vegetables. ... and hands as well.

➤ Consume raw vegetables and salads during the monsoons, only after they are thoroughly washed.

➤ Scrubbing green leafy vegetables, soaking them in a clean chlorine solution, and then rinsing them in boiled water helps eliminate most parasites.

➤ PERSONAL HYGIENE Wash your hands thoroughly with soap before eating. Work up lather and scrub for 5-8 seconds, and remember to clean under the fingernails.

The Don'ts

➤ Avoid foods that are cooked on the street, particularly fried foods, and Chinese food - the ingredients of these foods are generally uncovered and open to atmospheric contaminants and micro-organisms. In addition, poor personal hygiene from the cooks and open utensils increases the probability of food contamination.

➤ Avoid the food in cinema halls and public gatherings.

➤ Avoid raw eggs. Never put cooked meat back on the same plate that held it when it was raw.

➤ Avoid eating raw or undercooked local beef, pork, sausage, or fish as these can lead to infections.

Note:

Remember to consult your doctor immediately when afflicted with any water borne illnesses associated with fever, vomiting, and body pain.

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Healthcare for the poor

By Kalpana Sharma

14/5

IF YOU are poor, and live in a big city, the chances of getting good quality, affordable healthcare are fairly slim. Most often, when the poor fall ill, they either treat themselves, or turn to the neighbourhood quack, or a private practitioner with fake medical degrees. The lucky ones are those who can go to a Government or municipal dispensary or hospital. Even here, inconvenient timings, rude staff and corruption ensure that only those who have an acute problem and no option persist. Yet despite this, the public sector health set-up remains practically the only real option for the poor.

However, in this era of liberalisation and privatisation, where cost effectiveness is accorded a higher value than equity or affordability, public sector health facilities in many cities are declining — both in quantity and quality. Mumbai, however, remains an important exception to the rule. An interesting survey by the Centre for Enquiry into Health and Allied Themes (CEHAT), titled "Demand for Public Health Services in Mumbai" by T. R. Dilip and Ravi Duggal, brings out some interesting facts about health care preference amongst the poor. Asked by the Brihanmumbai Municipal Corporation (BMC) to assess whether people in Mumbai's most populous ward wanted a municipal hospital and would actually use it, CEHAT concluded that as much as 44 per cent of the households in the area were being forced to seek inpatient care from the private sector because there was no public hospital that was easily accessible.

Mumbai's urban poor are more fortunate than their counterparts in other metropolitan cities because they are better served by public health facilities. The BMC, as the CEHAT study points out, is a major provider of health care. It has three teaching hospitals, 16 general hospitals, and 26 maternity homes with a combined capacity of 11,500 beds. It also has 185 dispensaries and 176 health posts that provide outpatient

town. Covering an area of 24.5 sq km, it has a population of 8,06,360 — the most populous ward in the city with also the highest growth rate of 47 per cent between 1991-2001. While the literacy rate is 90 per cent, the sex ratio is heavily tilted — 839 women to 1,000 men — suggesting that the ward has a large population of working class poor men, who generally leave their families in the villages. The choice of facilities you go to

(32.6 per cent) said they chose it because it offered good quality service and 64.5 per cent said they found the costs affordable.

CEHAT has recommended that a public hospital be established in the area. It has also urged an expansion of outpatient facilities to meet the unmet need of people for treatment of minor ailments. At present, one municipal dispensary serves a population of 73,000 people. CEHAT recommends that there should be one dispensary for every 40,000 people. Similarly, the network of health posts could be strengthened to provide curative services rather than just preventive health care services as they do at the moment.

At the same time, indiscriminate increases in user charges in hospitals — under the guise of covering costs — could cancel the good that expanded public sector facilities could achieve. Currently people pay only Rs. 10 for registration in a public health facility in Mumbai, and there are free wards. But the fees for paying wards and investigations have increased dramatically since 2000. For instance, while a paying bed used to cost Rs. 100 a day, it now costs Rs. 200. A speciality operation used to cost Rs. 300; now it costs Rs. 1,000. And several tests that were free or cost very little now cost more than twice as much. These costs are still much lower than the private sector. CEHAT notes that people are willing to pay reasonable charges. Yet these must not exceed the capacity of the poor to pay. Otherwise the rationale for expanding public sector health care will be negated.

The public sector health set-up remains practically the only real option for the poor.

care and other public health services. In addition, the Maharashtra Government has one medical college hospital, three general hospitals and two health units, with a combined capacity of 2,871 beds. Together these facilities serve a population of 11.9 million (Greater Mumbai, 2001 census) of whom about half live in the slums.

Despite this network of public health services, earlier surveys by CEHAT reveal that 32 per cent of ailments of the city's residents remain untreated, mainly minor ailments that could be treated in outpatient facilities. According to the researchers, the central factor for this is the inability of the urban poor to pay for health care through the private sector. The public sector outpatient network is inadequate or under-utilised because of inconvenient timings, or location.

The ward that CEHAT surveyed would be the equivalent of a small

for treatment for ailments — minor or more serious ones — depends greatly on costs when you are poor and dependent on daily wages. The study reveals that while the median cost of treatment in a public sector facility for inpatient care is Rs. 600, it is Rs. 5,000 in the private sector. Even for outpatient care, the private sector costs twice as much as the public sector. As a result, poor people are willing to travel a considerable distance to the nearest public sector facility, particularly for inpatient treatment, because they just cannot meet the costs of a private hospital.

However for outpatient care, the majority of households use the private sector, largely because these facilities are within easy reach. The survey found that 82.4 per cent of households used the private sector for outpatient care and 53.8 per cent for inpatient care. Of those who opted for the BMC facility for inpatient treatment, a substantial number

Tough Times With TYPHOID

Dr. P. V. Vaidyanathan



According to the best global estimates, there are at least 16 million new cases of typhoid fever each year, with 600,000 deaths. Typhoid fever has been around for such a long time that most people are well aware of the disease and its repercussions. What the common man may not be aware of, is the fact that the disease is now becoming more and more virulent. Medicines, which were previously used to treat typhoid are now almost useless, and even with the newer medicines, doctors are finding it difficult to cure this disease. Let us take a brief look at the disease, its ill effects and treatment options.

My Doctor • August 2003

Typhoid and Paratyphoid are caused by a group of organisms collectively called *Salmonella*. While typhoid is caused by *Salmonella Typhi* subgroup, Paratyphoid is caused by Paratyphi A and B subgroup. Both these diseases behave similarly, though paratyphoid tends to be less severe an infection than typhoid. These diseases are spread, most often through infected food and water, though an individual who is a 'typhoid carrier' can spread the disease, without himself or herself actively suffering the disease. Once the typhoid germs reach the intestine, they disseminate to the various organs of the body, multiply and cause the various signs and symptoms of the disease.

Signs and Symptoms

Signs and symptoms of the disease, include, mainly high grade fever and chills, bodyache, nausea along with abdominal pain, vomiting, diarrhoea, headache, and tiredness. The untreated disease runs its own course for 4 weeks, before subsiding on its own. During these 4 weeks, it can cause plenty of complications like intestinal perforation, gall bladder infection, shock, pneumonia, heart muscle inflammation, bleeding, etc. Relapse can also occur in 5 to 10 percent of patients, usually two to three weeks after the resolution of fever. The relapse is usually milder than the original attack, and responds to the same medicines. Some patients can have multiple relapses. These relapses are because of resistant germs from the primary infection and not a re-infection.

Diagnosis

Diagnosis of typhoid is done with the help of blood tests. Some tests are positive from the 1st day, while the most commonly employed test (Widal) is positive only from the second week of fever.

Treatment

Treatment includes plenty of rest, steps to control fever, moderate diet restriction and anti-typhoid medications. Previously, the drug used to treat typhoid was *Chloramphenicol* and

it was uniformly effective. Ampicillin, Amoxycillin and Co-trimoxazole were second line medicines, giving excellent results. But, since the last 10 to 15 years, the Salmonella germ has been developing resistance to all these medicines, rendering them useless. In the nineties, the introduction of newer molecules like Ciprofloxacin halted the spread of typhoid and provided succour and relief to sufferers of typhoid. Of late, the typhoid bacteria have become resistant to even this group of medicines. The situation today is such that, in many cases, only very high antibiotics (called *third generation Cephalosporins*), given as intravenous injections, for a period of 10 to 14 days, are able to cure the patient. This effectively means that 70 to 80 percent of patients of typhoid will land up in a hospital for intravenous therapy. Although generally safe, these medicines can also have serious side effects, once in a while. Some neighbouring countries are even reporting resistance to these high antibiotics. Here is hence, clearly a case for prevention, rather than a cure.

Prevention

- 1) Consume only boiled or filtered water
- 2) Avoid eating from unhygienic roadside stalls
- 3) Vaccinations
- 4) Treatment of carriers.

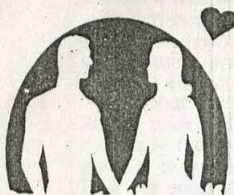
Vaccinations are available for both children and adults. An oral form of the vaccine, which can be administered to anybody above the age of 6 years, is very convenient. It comes as a set of 3 tablets, one each to be consumed on alternate days. The injectable vaccine can be given above the age of 2 years. Both these vaccines do not have significant side effects and provide protection for a period of 3 years. Re-vaccination is required, every 3 years.

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Eat more, weigh less, live longer

STAYING LEAN may be the simple reason why a near-starvation diet prolongs the life of many creatures.

'Caloric restriction' greatly extends the lifespan of organisms as diverse as the yeast, worms and also rodents.

Various explanations have been proposed, for example that eating less reduces the production of harmful free radicals that damage cells. But Ronald Kahn at Harvard Medical School in Boston wondered if animals benefit simply because they achieve a lean state.

To find out, his team knocked out the insulin-receptor genes in the fat cells of mice, preventing the build-up of fat deposits.

By about three months of age, Kahn's mice had up to 70 per cent less body fat than normal, despite the fact they ate 55 per cent more food per gram of body weight. And they lived 18 per cent longer. After three years, all the controls were dead, but a quarter of the lean mice were still alive.

"These mice eat all they want, lose weight and live for a long time. It is like heaven," says Cynthia Kenyon, who researches ageing at the University of California, San Francisco. The work suggests that leanness, and not the diet, could be the strong key to longevity in calorie-restricted animals.

Yet although lean people are less likely to suffer from a variety of dis-



Pharmaceutical companies are producing weight-loss drugs, creating products that block insulin receptors only in fat cells will not be easy.

eases, there is no firm evidence that they live dramatically longer.

And while pharmaceutical companies are racing to produce weight-loss drugs, creating products that block insulin receptors only in fat cells will not be easy. Inactivating insulin receptors throughout the bodies of mice has serious effects — including obesity and a shortened lifespan.

"That they get these effects just by manipulating the fat cells is provocative," says Leonard Guarente of MIT,

who studies caloric restriction in yeast. But he says Kahn has yet to prove that the same effect is responsible for increased lifespan in calorie-restricted animals. "There might be two routes to longevity, which would be very interesting."

And Kenyon points out that it is not clear that leanness itself is what makes the mice live longer. Fat cells secrete hormones that affect the whole body, so altering them could have widespread effects on physiology. — New Scientist

'The challenge of diabetes'

Dr. C.V. Krishnaswami, Head of the Diabetes Department, Voluntary Health Services Hospital, Chennai, writes:

I am unable to understand the reasons prompting the Editorial in *The Hindu* (Aug. 19) "The challenge of diabetes", which strikes a note of panic describing diabetes as a "major public health concern" in India! Environmental pollution, woeful sanitary conditions, awful drinking water situations, mosquito menace, etc., are the real public health concerns. The complex genes of this age-old and ubiquitous disorder called Type 2 Diabetes (adult-onset diabetes) are acquired at birth and the clinical disease usually manifests at around 40 years of age and above; sometimes, it occurs in younger people and more infrequently in children below 15 years of age. The latter situation is increasing with increasing Westernisation in food habits, lifestyle and obesity; so much so, the occurrence of Type 2 Diabetes in children below 15 years is reportedly on the rise in countries like the U.S., the U.K., Japan, Hong Kong and Singapore.

For a country as large and populous as India the database for diabetes is woefully poor, confined to small studies from the corporate and NGO sectors. The WHO (which has a regional presence in New Delhi) in its wisdom does not even mention India in its technical report on Type 1 Diabetes (insulin dependent diabetes mellitus, or juvenile diabetes), but has released predictions and estimate of Type 2 Diabetes, three dec-

ades hence when India is projected as the diabetes capital of the world!

Sir, I may be wrong, but I would like media leaders like *The Hindu* and other, enlightened press, not to fall into this trap of "Epidemiologists causing epidemics" – the title for an Editorial in the *Lancet* (April 17, 1993).

From the VHS Diabetes Department we have collaborated with the National Institute of Epidemiology, Chennai and carried out a detailed, and statistically significant survey of 1,56,258 persons from 30 randomly selected Corporation divisions in Chennai in 1998. According to the study, the prevalence of diabetes was three per cent for all age groups from 5 to 70 years, 4.9 per cent for above 20 years and 10.5 per cent for above 40 years.

The detailed study and results were published in national medical journals. For reasons best known to it, the WHO has not taken cognisance of these reports and had its estimates drawn from other sources whose validity in giving the true projection in terms of futuristic numbers of the condition for the country as a whole needs to be questioned critically.

The Government of India should coordinate studies from the different regions of the country and maintain a central database. But alas, they seem to have abdicated their responsibilities to private bodies with conflict of interests other than public welfare!

As a practising diabetologist of nearly four decades in Chen-

nai, I am both amused and alarmed at the proliferation of the ad blitz on diabetes (centres and cures) which makes very good business sense, but poor public health sense!

Change in lifestyle depends on several factors – personal and environmental. It is easily spoken about but difficult to implement in long term practice. Again, this is an area where a lot of business is generated, with very little tangible long-term benefits.

A lot of brouhaha was created about prophylactic medicating trials for diabetes, which were both unethical and medically unsound as was proven by the study conducted by the National Institute of Health (NIH), in 2001.

Type 2 Diabetes is a personal heredo-familial disorder with a complex inherited genetic predisposition, upon which many environmental factors such as obesity, stress, sedentary habits, multiple pregnancies, drugs, toxins, etc., act to precipitate the condition which may manifest any time from childhood to old age.

Education about diabetes and its management are not achieved through advertisement causing panic in the minds of the public.

It should be done by neutral organisations with no ulterior motive or vested interests, giving facts and encouragement through information for positive living with diabetes. In that sense your Editorial 'Eat and exercise sensibly' (*The Hindu*, Sept. 4, 2002) was most appropriate and timely for the generation next.

THE CHALLENGE OF DIABETES

DIABETES IS A major public health concern as more and more people are falling prey to the disease in both the developed and the developing world. The World Health Organisation estimates the number of diabetics in India today at 30 million compared with 19.7 million in 1995. Animal insulin harvested either from pigs or cows has been a traditional source but it does not have the same amino acids as human insulin. While porcine insulin differs from the human type in one amino acid, the difference is two between bovine and human insulin. This difference is overcome by changing the amino acid to make it 'similar' to human insulin. One company continues to sell in India such semi-synthetic 'humanised' insulin in the name of human insulin while marketing yeast-based recombinant insulin internationally. The success of Wockhardt, an Indian pharmaceutical company, in producing human insulin, Wosulin, through the recombinant technology to combat diabetes has come at the right time. Human insulin is so called not because it is extracted from the human body but because it is structurally and chromatographically similar to the one produced by humans. Apart from bypassing the animal insulin route, Wockhardt has gone in for a yeast species *Hansenula polymorpha* rather than the bacterium *E.Coli* as the host. Unlike *E.Coli*, which poses certain inherent problems, yeast secretes insulin outside the cell as a processed and properly folded proinsulin molecule. Higher productivity is achieved when yeast is used. Wockhardt's breakthrough gains importance as it is the fourth company in the world — and the first outside the U.S. and Europe — to master the technology. This mastery comes in eight years after the first recombinant human insulin was commercialised in India.

The global insulin market is presently valued at over \$3 billion. The Indian market alone is

valued at Rs. 250 crores. The huge demand notwithstanding, pharmaceutical companies around the world have been unable to crack the technology. The breakthrough by an Indian company is to be comprehended against this backdrop. A splendid advantage for the new Indian product is that Wosulin costs the same as porcine insulin. It is priced even lower than 'humanised' insulin, and is nearly 50 per cent cheaper than a similar yeast-based recombinant human insulin. This competitive advantage, which can be of great benefit to society, stands out even in a market where some companies have effected a sudden 35-40 per cent reduction in price.

The availability of cheaper and technologically superior insulin should not, however, be a cause for complacency. The WHO estimates that the disease burden in India will increase to 80 million by 2030; this is 23 million more than the original estimate for 2025. Where the WHO erred was in the underestimation of the adverse impact of relative affluence and lifestyle changes on the incidence of diabetes in society. Given the pace of these lifestyle changes, even 80 million cases by 2030 may turn out to be an underestimate. Medical data suggest that, in an international comparison, Indians have a relatively high genetic predisposition towards diabetes. This in combination with sedentary lifestyles, the consumption of fat-rich food, and increased longevity increases the risk. Medical data also suggest that urban Indians are more prone to affliction by diabetes than rural Indians, and people of Indian origin in the United States and Europe more than the Indian population. Until such time as a cure is found, prevention is the only way out. Even after a cure is found, prevention will remain the best way by far. For this a massive public awareness campaign in both urban and rural India becomes an imperative.

RURAL DEVELOPMENT

Atal Bihari Vajpayee
Prime Minister

Kashiram Rana
Minister of
Rural Development

Paradigm shift in strategy for Rural Development

- Strategic pro poor policy adopted treating rural poor as resource with immense potential.
- Emphasis on participation of people through Panchayati Raj Institutions (PRIs) and Self Help Groups (SHGs) in planning, formulation and execution of rural development programmes.
- Enhanced allocation of funds of the order of Rs. 76,774 crore during Tenth Plan against Rs. 42,874 crore during Ninth Plan.

Promoting decentralization to ensure people's participation in development

- Strengthening of Panchayati Raj Institutions through devolution of adequate administrative and financial powers and responsibilities including key role in implementing rural development programmes.

Promoting self-employment in rural areas

- Swarnjayanti Gram Swarozgar Yojana (SGSY) a holistic programme for promoting Self Employment of Rural Poor launched on 1st April, 1999 with emphasis on organizing the rural poor into Self Help Groups (SHGs) and ensuring their capacity building, training, economic assistance, marketing and related infrastructure.
- Since inception 14.5 lakh SHGs formed and more than one lakh Groups have taken up economic activity.
- 37 lakh Swarozgaris assisted with an investment of Rs.7500 crore (approx).

Promoting Food Security, Gainful Employment and Infrastructure

- Sampooama Grameen Rozgar Yojana (SGRY) launched on 25th September, 2001 with an annual outlay of Rs. 10,000 crore.
- A minimum of five kilogram of food grains are provided in addition to cash payment as wages to the poor.
- Yojana aims to generate more than 70 crore mandays per annum.

Strengthening of rural Infrastructure

- Pradhan Mantri Gram Sadak Yojana (PMGSY) launched in December, 2000 aims to connect all unconnected rural habitations (around 1.60 lakh) with all weather roads by 2007 with an investment of Rs. 60,000 crore. Project proposals for about Rs.9000 crore cleared so far aiming to connect about 40000 habitations with roadworks of about 67000 kms. About 15000 roadworks already completed.

Shelter for All

- Construction of 13 lakh houses annually in rural areas for the Below Poverty Line families. 56 lakh houses constructed during 5 years with an investment of about Rs.10,860 crore. Cost effective and disaster resistant technologies are also promoted through Innovative Housing Projects and Rural Building Centres.

Potable Drinking Water for All

- Drinking water for all by 2004. 99 per cent habitations have already got access to safe drinking water.

- Community based rural water supply programme 'Swajaldhara' launched on 25th December, 2002, to open up reforms initiative in drinking water sector throughout the country.

- A special initiative taken for installation of one lakh hand pumps, provision of drinking water in one lakh primary schools and revival of one lakh traditional sources of drinking water in rural areas with an investment of Rs. 700 crore.

- Special efforts to provide safe drinking water in rural habitations affected by water quality problems like fluorosis, arsenic, brackishness, excess iron etc. and to conserve water sources.

Rejuvenating Wastelands / Degraded Lands

- Plan Allocation enhanced from Rs. 324 crore in 1999-2000 to Rs. 1050 crore in 2003-2004
- New watershed projects taken up for development of 138 lakh hectares of wastelands/degraded lands.
- A new initiative 'Haryali' launched in 2003 to be implemented by Panchayati Raj Institutions.

Promoting cleanliness and hygiene in Rural Areas

- Central Rural Sanitation Programme restructured in 1999 to make it people friendly and demand driven with focus on awareness generation to create demand for sanitation facilities.
- Total Sanitation Campaign being implemented in 265 Districts.





